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MALE INFERTILITY*

BY

T. N. A. JEFFCOATE, M.D., F.R.C.S.Ed., F.R.C.O.G.

(From the Department of Obstetrics and Gynaecology in the University of Liverpool)

lthough it has been known for centuries that the unfruitfulness some marriages is due to a fault in the male rather than the male partner, only within the last few years has male fertility ceived the attention it merits. Even now its importance is not ways appreciated by members of our profession, let alone the y public. Some men, particularly of hospital class, refuse ny sort of investigation, and for reasons which are now well nown—ignorance, embarrassment, religious scruples, fear of ss of male prestige, etc. It is not rare for the wife to object her husband being examined, either because she is afraid of ie effect that knowledge of his infertility may have on their lationship, or because she believes that male infertility can-ot be treated successfully and she prefers to live in hope ather than know the truth. Some doctors explain their omis-on to test the husband on the ground that the discovery of nale infertility will have a bad psychological effect and create nhappiness. There may be grounds for this view in the iso-ated case, but in general it seems an excuse rather than an dequate reason. Great care is necessary in disclosing the cause f their infertility to any couple, and even then it must be dmitted that unforeseen reactions disturbing the harmony of ie marriage sometimes occur. What is said to the couple will ary with individual cases, and prognosis should err on the side f optimism. Often it is best not to tell the whole truth, articularly to men afflicted with impotence, lest their self-onfidence be further weakened.

For the purpose of this paper a series of 512 consecutive ases of sterility seen in private practice and personally in-estigated have been analysed. Also, for comparison, an nalysis of 283 consecutive cases seen over a short period in ospital practice is also included. The findings are those of outine clinical practice and do not in any way represent the sults of a special investigation. The majority of the cases ere dealt with during the war years, when laboratory and ther facilities were limited and when many husbands were way from home for longer or shorter periods. All the cases ere investigated not less than one year before this review, and ie after-history is known in all except 67. An honest attempt examine the husband was made in every case except those which the wife had symptoms additional to the sterility and ie investigation of the latter became incidental to the treatment f the cause of the former. Of the 512 private cases only 491 ere investigated, and out of these some sort of assessment of ie husband's fertility was made in 320. In the hospital series ie husband's fertility was assessed in 115 of the 252 cases ivestigated.

The first question which arises, and one which is always being sked, is, " How often is the male partner responsible for infer-tile marriage? " It is difficult if not impossible to give a concise answer to this—or, indeed, to form any exact estimate, and for the following reasons:

1. Fertility, either of the individual man or woman or of a marriage, is a matter of relativity. Comparatively few people are absolutely sterile or fully fertile. All intermediate grades of fertility occur in either sex, and the fruitfulness of a marriage is dependent on the summation of the fertility of the two partners. If there is no absolute bar to conception on either side, low fertility in one partner may be cancelled out by high fertility in the other.

2. In a large proportion of cases infertility results not from one but from several factors, which may be distributed between the two partners. The average number of such factors per case is variously assessed as between 2.23 and 4.75 (Hamblen, 1945). Thus, for example, the wife may have a cervical erosion and a uterine retroflexion, whilst the husband's production of spermatozoa may be subnormal as regards both number and quality. Who is to say which factor is the most important or indeed which partner is chiefly to blame? Scientifically, therefore, a statement of the cause of childlessness in any marriage should consist in a listing of all the infertility factors present. Treatment should aim at the elimination of as many of the infertility factors as possible.

3. The assessment of male fertility is in itself difficult.

(*a*) *Procreation Test.*—Perhaps the best test is whether a man can procreate children, and there are many cases in which it is known that the husband has had a child by another woman or by the wife. Sterility following one or more pregnancies is common, and in such cases there is a natural tendency to exonerate the husband from blame—on the ground that he has proved his fertility. If a man has been responsible for several pregnancies then it is reasonably certain that his fertility is within normal limits unless circumstances which might have affected it have arisen since the last pregnancy. If, however, he has been responsible for only one pregnancy, it is by no means proof that his fertility is up to average standards, and it is not difficult to produce many cases showing that, although a man has procreated once, his fertility is so low that the chances of his repeating the performance are remote. In this series there were 181 women complaining of infertility after one or more pregnancies, although 10 must be excluded because the man responsible for the pregnancy was not the husband. It will be seen from Table I that when the wife had had one abortion 11 out of the 25 husbands tested had impaired fertility—in one case azoospermia to two tests. When the women had had one child 13 out of 33 husbands were proved at fault. It should be kept in mind, however, that the husband was tested in only about one-third of the cases. In many of the others some gross abnormality, such as occluded or damaged tubes, was found in the wife, and the chances are that the husband in those cases was normal. Nevertheless, comparable figures are published in the literature (Lane-Roberts *et al.*, 1939). There are several explanations for such findings. Sometimes the husband has had an illness or injury since the date of the previous pregnancies: in two of these cases mumps had occurred, but in

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only one of them was there a history of orchitis. Sometimes spermatogenesis fails or deteriorates without any apparent reason at a comparatively early age. The usual explanation, however, appears to be that the husband had always been subfertile and the occurrence of the one pregnancy with no subsequent ones depended entirely on the laws of chance.

TABLE I.—*Relative Infertility*

Total no. of cases	181
No. of cases in which present husband was not the father	10
Husband not tested	6
„ proved normal	2
„ proved to have azoospermia	2
No. in present series	171

	No.	Husband Examined	No. with Male Fault
One abortion only	50	25	11 (*a*)
One child only	83	33	13 (*b*)
More than one pregnancy	34	6	0
Ectopic pregnancy only	4	1	0
Total	171	65	24

(*a*) One case showed azoospermia to two tests.
(*b*) Intercurrent disease (mumps) in two cases.

(*b*) *Clinical Examination.*—Routine examination of the male, from both the standpoint of general health and the conditions of the sex organs, is clearly required—as are the details of the past history of any disease which might have affected genital function. Knowledge of the sex life of the individual, frequency of coitus, etc., is also helpful. However, physical examination of the male is of strictly limited value: if the findings are positive—e.g., atrophied testes—then they are significant, but if the findings are negative no conclusion is possible. In this series only about one-quarter of the husbands were interviewed and examined, and only five of these belonged to the hospital class. The remainder were not seen either because they refused or because they were not available for reasons of national service. However, the wives were always questioned as to the age, occupation, general health, and previous illness of their partners. The relationship beween the clinical findings and male fertility as assessed by semen analysis is shown in Table II. The

TABLE II.—*Clinical Features as Compared with Semen Analysis*

	Cases
A. Husband not examined physically, but no significant history obtained via wife	535
Semen normal	147 cases
Gross infertility	48 „
Minor infertility	51 „
No semen test	289 „
B. Husband examined or history of significant ill-health obtained via wife	208

Findings on Clinical Examination		No. of Cases	Normal Semen	Gross Infert.	Minor Infert.	Semen not Tested
Normal genitalia	No significant history	132	95	10	16	11
	Impotence	14	1	1	2	10
	History of adult mumps	1	—	1	—	—
	History of G.C.	5	2	2	—	1
Bilateral testicular atrophy or hypoplasia. (Various causes; impotence as well in 2 cases)		26	2	17	3	4
Unilateral testicular atrophy or hypoplasia		7	1	3	3	—
Varicocele without testicular atrophy		7	2	2	3	—
Phimosis		1	1	—	—	—
Not examined	History of orchitis	1	—	—	—	1
	History of G.C.	3	1	2	—	—
	History of adult mumps	4	2	1	—	1
	History of syphilis	1	—	—	—	1
	Age over 60	2	1	—	—	1
	History of severe general disease—e.g. phthisis	4	—	1	3	—

figures here bear out the general contention that genital abnormalities recognizable on routine examination nearly always mean impaired fertility, but they also show that of 132 men who had a good past history and apparently normal genitalia 26 had lowered fertility, often of serious degree.

(*c*) *Semen Analysis.*—Male fertility is mainly assessed by semen analysis. Seminology is now occupying the attention of a good many research workers in several countries, and it may ultimately be found that an exhaustive examination of the various characteristics of both fluid and cellular contents is necessary before any conclusion can be drawn in any given case. At present, and for practical purposes, the least information that is required about any specimen concerns particulars as to the volume of the fluid, the number of spermatozoa, their motility, their survival capacity, and their morphology. In assessing any one specimen all these features should be considered in relation to each other rather than separately. The examination of a single specimen in any one case is probably not sufficient, since semen does show spontaneous variations, particularly in some individuals. In this series examinations were carried out on semen collected by masturbation into a glass container and transported at atmospheric temperature. The test was usually repeated when the findings were abnormal.

The interpretation of semen analysis demands some criteria of what is normal or at least within normal range, and here difficulty arises. Reference to this will be made later, but the criteria used in connexion with these cases have been: (*a*) The volume of fluid was accepted as abnormal only if it was repeatedly less than 0.5 ml., or if the sperm density was also low, making the total population of the specimen less than 50 millions. (*b*) Number of spermatozoa. With the above exception, no count above 30 millions per ml. was accepted as outside the range of average fertility. (*c*) Motility. When specimens were suitable for motility examinations, asthenozoospermia was diagnosed only if there were less than 40% motile at the end of six to eight hours. (*d*) Morphology. Semen was not regarded as subfertile unless more than 50% of spermatozoa were found malformed. The observations confirm those of others—namely, that the greatest number of morphological faults are mostly seen when the sperm count is low; so, partly for convenience, and partly because experience goes to show that sperm density is the most important single criterion, the findings are classified under the headings of number of spermatozoa rather than according to their morphology. When the sperm count was found to be 10 million per ml. or less, it was taken to mean serious impairment of fertility. All other types of seminal faults are classified as indicating moderate impairment only.

Of the total of 743 infertile marriages investigated, semen analysis was carried out in 424. In 108 cases, however, the full details are not available, because the pathologist of one hospital, although indicating significant departures from the normal when they were encountered, otherwise reported the number, motility, and morphology of spermatozoa as being "within normal limits." This was accepted at the time, but it is not satisfactory, and it may have resulted in the omission of some cases of impairment of fertility. Another 5 tests were carried out elsewhere, and the results could be obtained only through the wife, who described them as being reported to her as "unsatisfactory." It is to be regretted that with few exceptions it was impossible to take steps to distinguish between seminal abnormalities due to faulty spermatogenesis and those due to an obstruction in the path of exit of the spermatozoa.

The findings are set out in Table III, from which it will be seen that in the private series the husband alone was at fault

TABLE III

Private series	Total no.	512
	No. investigated	491
Hospital series	Total no.	283
	No. investigated	252

Main Causes of Infertility	Private Series No.	Private Series %	Hospital Series No.	Hospital Series %
Fault in wife (husband normal)	152	31·0	46	18·3
Fault in wife (husband's fertility not investigated)	139	28·3	107	42·4
Fault in husband (wife normal)	72	16·7	30	11·9
Fault in husband (wife not investigated)	10		—	
Fault in both husband and wife	52	10·6	19	7·5
No cause for infertility found	66	13·4	50	19·8
Both partners investigated	27		11	
Only wife investigated	32	6·5	30	11·9
Only husband investigated	7		9	
Total no. of husbands investigated	320	(Semen test in 309)	115	(Semen test in 115)
No. with lowered fertility	134	(41·1%)	49	(42·6%)

in about 16.7% of cases and that both partners were more or less equally at fault in about another 10.6%. It should be noted, however, that in the 28% in which an infertility factor (frequently a minor one such as acute anteflexion of the cervix) was found in the woman the man was not tested. Furthermore,

in another 6.5% in which the husband's fertility was not assessed no abnormality at all was found in the wife, and in many of these it is highly probable that the husband, if he had been available, would have been found infertile. In some of these cases this is almost certain because there was suggestive evidence by way of past illnesses, or the wife was fertile to other men, etc. It seems fair to conclude that there is an important male infertility in about one-third of the cases, although in about one-third of these the wife too has some impairment of fertility. The findings in the hospital series are not so informative because a smaller proportion of husbands were investigated. So in only about 19% was a male fault found. There is little doubt that this figure would be much higher if more complete inquiry had been possible. This contention is borne out by the fact that in both series 40% of the husbands examined were found to be subfertile. These figures are confirmed by nearly all recent writers. Thus Siegler (1945) found a male fault in 47.9% of cases (combined with a female fault in 22.3%). Mazer and Israel (1941) say that at least 40% of husbands of infertile marriages can be shown to be at fault. Hamblen (1945) says that absolute sterility is due to male causes in 40–45% of cases—although he adds that fertility-reducing factors are present in over 90% of husbands of infertile partnerships. Sharman (1944) found that 31.6% of husbands tested had subnormal seminal fluid.

Fifteen per cent. of the marriages in this country (Registrar-General's Statistical Review, 1938) and in America are childless: involuntary sterility is present in not less than 10% of marriages, and is now mostly reckoned as occurring in one of every eight or nine couples (Hamblen, 1945). If we accept the conservative figure of 10% and admit that in not less than one in three infertile marriages the husband is wholly, or in large measure, responsible, then we can conclude that at least one in every 30 men who marry is either sterile or has considerably impaired fertility. That means that in England and Wales (the 1939 and 1940 figures) something like 15,000 to 16,000 subfertile men get married every year. These figures are so impressive, and child-bearing means so much to the happiness of the average woman, that there is something to be said not only for premarital physical examination of the man but for routine semen analysis. However, if premarital semen analysis is carried out it must be done efficiently and the results interpreted with caution. In this series are men of extremely low fertility who had previously been pronounced fully fertile on the finding of a few motile spermatozoa in a hanging-drop preparation. There are others in whom no fault was discovered who had elsewhere been diagnosed as infertile because spermatozoa in a condom specimen had been found amotile—a finding which is almost the rule.

Types of Male Infertility

The details of the types of male infertility in the 183 cases are set out in Table IV. Some would not include cases of impotence, but it should be pointed out that no such cases are included in this series except when the desire for children was the chief concern of both husband and wife. Impotence in varying degrees is probably more common than is generally supposed. In order that the balance of the series be not disturbed, apareunia due to conditions such as vaginismus is included under faults in the wife, but again only when sterility was the chief complaint. Thirty-eight men had azoospermia and another four submitted specimens which sometimes showed azoospermia and at other times extreme oligozoospermia. These, together with 46 men with a sperm count of 10 million per ml. or less, make up a total of 88 cases of seriously impaired fertility.

TABLE IV.—*Details of 183 Cases of Male Infertility*

Impotence (semen normal in 2; not examined in 11)			13
Phimosis preventing coitus (semen normal)			1
Faults in semen (impotence as well in 3 cases)			169
1. Low sperm density, etc.		137	
Persistent azoospermia	38		
Intermittent azoospermia	4		
2 million or less per ml.	20		
3–10 million per ml. (impotence in 1)	26		
11–20 million per ml. (impotence in 2)	20		
21–30 million per ml.	29		
2. Low volume alone		2	
3. Low volume with total sperm population less than 50 millions		3	
4. More than 50% abnormalities		12	
With asthenozoospermia	3		
Without proved asthenozoospermia	8		
With low volume	1		
5. Necrozoospermia or asthenozoospermia		10	
6. Semen "unsatisfactory"—probably azoospermia		5	

Impotence

Impotence is more often due to psychological disturbance than to any physical disability or endocrine upset. There was only one example of obvious endocrine disorder, and that pituitary infantilism. Nevertheless, in three out of the 16 cases (and the semen was examined in only five cases) there was definite evidence of defective spermatogenesis. In one case fertility was grossly subnormal and testicular atrophy following mumps was present. Even in these cases, however, there was a psychological factor which was probably important in the causation of the impotence. As a rule it was easy to elucidate the reasons for the men's inhibition: guilt over masturbation; a wrong outlook on sex resulting from misguided instruction from parents and others; religious zeal; an abnormal respect for the opposite sex; underlying desire not to have children—all were encountered. Some men could be described as effeminate or undersexed, but, contrary to the suggestion of Lane-Roberts *et al.* (1939), it was not only the latter who complained of the type of impotence in which erection and penetration are achieved but ejaculation never takes place. In one of the cases the husband developed secondary impotence because the wife wrongly accused him of sterility. The treatment of these cases consisted essentially in talks and discussions with the object of sorting out the underlying cause of the inhibition, explaining it, and giving instruction on sex matters. The wife was interviewed separately and instructed in the attitude she should adopt, the need for sympathetic encouragement and patience on her part being stressed. The wife was not always helpful, however, and any good she may have achieved was sometimes undone by an outburst which revealed her exasperation at the repeated failure of her husband's attempts. Testosterone, usually by the sublingual route, was also employed, but in the main proved ineffective. Even when it appeared to help it may well have been because the man was impressed by the idea of taking a glandular preparation.

The results of treatment of this series were as follows. Two men refused to co-operate or have any form of treatment. That leaves 14 who were treated both by interview and by discussion, and sometimes by testosterone—mainly administered by mouth. In five cases the ultimate effect is unknown. Of the other nine, three showed little improvement, while six were cured—four to the extent of proving their fertility by impregnating their wives. In one of the latter cases, however, the pregnancy resulted from artificial insemination and was ectopic in site.

Causes of Defects in Production or Delivery of Spermatozoa

1. *Mumps.*—Mumps occurring after puberty is always a potential menace to testicular function, at least so far as the production of spermatozoa is concerned. Ten men gave a history of having had this disease after the age of 14, but in one the seminal fluid was not examined. Of the nine examined six had either azoospermia or extreme oligozoospermia and teratozoospermia. Only two men are recorded as having a count within normal limits, and both of these were only 14 at the time they had mumps, and did not suffer from orchitis. One proved fertile. The remaining man had atrophy of one testis, and although the number of spermatozoa was low he achieved one pregnancy in seven years.

2. *Cryptorchidism.*—Late or non-descent of the testes is well known to affect spermatogenetic function adversely, probably because of the slightly higher temperature within the abdominal cavity. All four of the patients with bilateral cryptorchidism or giving a history of operation for such had azoospermia or extreme oligozoospermia. There were two other men in whom only one testis was undescended. The descent of the other may have been late, but details of this could not be obtained. Both showed moderate impairment of fertility. None of these six men has had children. Unless there has been operative treatment, or unless the testes have remained permanently above the scrotum, it is usually impossible to obtain from patients any information as to the age of descent. It may be that spon-

taneous descent at a comparatively late age sometimes accounts for otherwise inexplicable hypoplasia or atrophy of the testes.

3. *Venereal Disease.*—(*a*) *Gonorrhoea* mostly affects male fertility by producing an obstruction in the epididymis and, less commonly, in the vas or ejaculatory ducts. The testis is rarely affected, and usually continues to function even when its duct is closed. It is, of course, often difficult to get a man to admit having had gonorrhoea, but it is known that eight men in this series had suffered from it. The semen was examined in only seven and was normal in three. In another three no spermatozoa were found in the fluid, and they probably had some obstructive lesion. One of them certainly had, according to the findings on testicular puncture. In the remaining one the count was reduced to three million per ml., but he alleged that he had had a child (subsequent to the gonorrhoea) by another woman. (*b*) *Syphilis.*—Only one man gave a history of syphilis, but he was not examined. Nevertheless he had a child. This case was interesting because the wife had had three husbands, each of whom had children by other women. Yet when she was examined no cause for infertility could be discovered.

4. *Varicocele.*—Nine men were found to have varicocele of significant size, and in two of these the testes were either hypoplastic or atrophied. It is impossible to say, however, whether the varicocele followed atrophy or whether it was primary and interfered with full development. In only two of these men was normal seminal fluid found; evidence of low fertility was present in all the others. Although no definite conclusion as to cause and effect is possible in these cases there seems little doubt that varicocele can interfere with testicular function—presumably by altering the temperature of the scrotum or the blood supply to the testis.

5. *Hormone Imbalance.*—When azoospermia or oligozoospermia is present there is often no obvious cause for it and the testes feel normal. On section it is said that the tubular apparatus shows areas of focal degeneration but that the interstitial tissue is unaffected (Hamblen, 1945), and this observation is supported by the fact that the man rarely shows signs of testicular hormone deficiency. The usual manifestations of pituitary disorder are not seen, and it is suggested that the fault is primarily in the testes, or, at any rate, that there is no deficiency in the gonadotrophic stimulus from the pituitary. Hypothyroidism appears to play some part at times, although there is little reason to suppose it has any direct action on the testis (Allen, 1939). One of the patients in this series with moderate impairment of fertility might have been regarded as showing a mild form of the dystrophia adiposa genitalis syndrome, and one as approaching giantism. A third was a typical case of pituitary infantilism, but he was impotent and no semen could be obtained for examination. In all the others physical development and secondary sex characteristics were within normal range. Basal metabolic rate estimations were not carried out.

6. *Sundry Causes.*—In isolated cases the following factors which might have affected spermatogenesis were encountered: a series of serious illnesses in childhood (1 case); orchitis following influenza (1 case); repeated exposure to *x* rays (1 case); history of bilateral hernia operation (2 cases); systemic disease such as malaria and phthisis (4 cases). One man had atrophy of one testis following injury, but produced good quality semen and subsequently had a child. There were no cases in which over-indulgence in coitus appeared to play any part—nor is there much evidence to support the view that it ever does lead to infertility. On the contrary, there were some cases in which the absence of children was at least partly explained by the infrequency of coitus.

7. *Causes Unknown.*—In about half the cases no cause was apparent, and this is the experience of most observers. In such, many possible aetiological factors have been postulated.

(*a*) *Nutritional Deficiencies in Childhood and Adolescence.*—As a result mainly of experiments on rats it has been suggested that inanition in general, and vitamin A, vitamin B_1, and vitamin E deficiencies in particular, lead to failure of spermatogenesis. Nevertheless there is little evidence to show that infertility in man is the result of a deficient diet, and the idea is not supported by the fact that errors in spermatogenesis are just as common in the middle and upper classes as in the more poorly fed lower classes, if not more common.

(*b*) *Heredity and Constitutional Factors.*—These may play some part in male fertility. They do in animals, and it has been shown that certain human families have a tendency to "die out." There is certainly, among patients, a widespread belief in inherited or familial infertility. Two sets of brothers, both suffering from azoospermia without obvious cause, were encountered in this series.

(*c*) *Occupation, Environment, etc.*—It has been stated that defective testicular function is more common in those of higher intelligence, or among brain workers, than in manual workers. It would probably be difficult to prove this, because, although the reproduction rate is higher in the labouring classes, this is almost certainly mainly the result of contraception practised in the higher grades of society. Nevertheless, there may be some truth in this idea, and clinical experience does give the impression that non-manual workers—those with responsibilities and anxieties—tend to be less fertile. The very nature of their work, usually necessitating long hours indoors and deprivation of sunlight and physical exercise, probably plays a part, as does the pace of modern life and the general stress and strain—nervous rather than physical. One of the conditions of modern life which may lower male fertility is the habit of taking frequent hot baths. The susceptibility of the testes and spermatozoa to even a moderate amount of heat is now generally accepted. Another consideration of interest, and possibly importance, is the failure of spermatogenesis which occurs with age. Many men remain fertile until advanced years, but in others testicular function seems to fail at a comparatively early age without any apparent ill-health to account for it. In one man, only 37 years of age, the sperm count gradually fell from 85 million to 17 million per ml. during the course of two years.

Finally, it should be kept in mind that in some cases of azoospermia and oligozoospermia in which the testes appear normal the lesion is an obstructive one in the epididymis, and not necessarily gonococcal in origin. A history of fleeting and mild non-specific epididymitis was elicited on close inquiry in two cases.

Treatment of Faulty Spermatogenesis

In the absence of an obvious cause the treatment of faulty production of spermatozoa is for the most part empirical. Attention to general health and habits, hours of work and recreation, etc., is always important, but, apart from this, some form of hormone therapy is usually advised. Many favour thyroid, but it was not used in this series, and serum gonadotrophin was the treatment of choice. This was given by intramuscular injections of 1,000 i.u., either twice weekly for three months or, in a few cases, daily for 10 days, and repeated after an interval. Vitamin E was given at the same time—although it is doubtful whether this is of any value, because experimental evidence goes to show that the effect of vitamin E deprival on the testes cannot be reversed. The details of treatment and the results are known in 14 cases. Three of these 14 men have since produced children, and in one case the man, who was shown on two tests to have azoospermia, impregnated his wife almost immediately after the course of treatment was completed—and that after eight years of sterility. The sequence of events made it look as though the treatment was concerned in the pregnancy, but it is more likely to have been a coincidence. Comparison of the semen findings before and after treatment is of some interest, and the details are given in Table V. Case 11 is the one just referred to, and it is to be noted that semen examined nine months after the conclusion of the treatment (i.e., at the time of the birth of the child) again showed what almost amounts to azoospermia. Only two spermatozoa were found after prolonged search of wet and stained preparations of the centrifuged deposit. Opinions vary as to whether treatment with gonadotrophin does in fact improve spermatogenesis, but, with the exception of cases 4, 5, 10, and 11, the findings recorded in Table V seem to indicate that the quality of the semen improves after treatment and that it deteriorates again when treatment is suspended. These results, although suggestive, are not conclusive, and the possibility of spontaneous variations in the semen cannot be excluded.

Although there is some evidence to show that small amounts of testosterone may improve sperm production, it can be stated that, in general, the effect, at any rate of large amounts of testosterone, is a depressant one. Testosterone was not used in the treatment of any of these cases, and when it was given for impotence care was taken in the matter of dosage, particularly when the man was known to have defective spermatogenesis in addition to impotence.

Treatment of Obstructive Lesions in Male Genital Tract.—The appropriate treatment of a mechanical obstruction of the

epididymis or vas is some form of short-circuit operation. None of the cases in this series was so treated, and, judging from the literature, the operation is difficult and the results on the whole unsatisfactory. An alternative line of treatment which at first sight appears hopeful is to obtain spermatozoa by testicular puncture and to inject them into the vagina. This, however, is not satisfactory, because the spermatozoa as they leave the testis are immature and incapable of fertilization. They become fully matured only during their two-weeks journey through the epididymis and vas. And so it is stated (Halbrecht, 1944) that there is but one reported case of successful insemination with material taken from the testis.

Investigation and Treatment of the Wife.—If the wife should not be subjected to the investigation and treatment of infertility until the husband's fertility has been assessed, then equally there is much to be said for not subjecting the husband to treatment until there are good grounds for believing that the wife is reasonably fertile. Thus, in this series, 14 husbands with defective spermatogenesis had wives whose tubes were damaged (completely obstructed in 3 and partially obstructed—including unilateral occlusion—in 11). It may be added that grounds—it usually necessitates masturbation. Its best indication is when the man suffers from some condition, organic or functional—e.g., hypospadias or impotence—which interferes with the act of coitus. For impotence it is excellent treatment, for the knowledge that he is fertile and the father of a child goes a long way towards restoring the man's confidence and self-esteem. Also, once pregnancy is achieved the necessity for coitus becomes less vital, and both husband and wife can then approach it in a more natural and spontaneous way. The only difficulty is that so many impotent men find it impossible to provide the specimen for insemination. When they can, and when the semen is of good quality, the results are good. If, however, artificial insemination is employed with the object of mitigating the effect of defective spermatogenesis the results are poor. This procedure is also indicated when the woman has some condition of the vagina or cervix which impedes the entrance of spermatozoa into the uterus. It has also been used empirically when no cause for infertility is found in either partner.

The results depend mainly on the indications for which it is employed. In two recent publications successes are reported

TABLE V.—*Seminal Findings Before and After Treatment with Serum Gonadotrophin*

	Before Treatment		After Treatment	
No.	1st Test	2nd Test	Immediately After Treatment	Later
1	2·1 ml. 3 millions; nearly all abnormal		3·6 ml. 22 millions; 50% abnormal	
2	1·8 ml. Too few to count; 0% motile, 100% abnormal		3 ml. 10 millions; occasional one motile at 1 hour, 100% abnormal	
3	1·1 ml. 160,000; 0% motile		1 ml. 2 millions; 0% motile at 3 hours, 90% abnormal *After further treatment:* 0·8 ml. 39 millions; 36% motile, 65% abnormal	
4	5 ml. 50 millions; 100% motile, 10% abnormal	5 ml. 9½ millions; 28% abnormal	4·1 ml. 74 millions; 80% motile, 40% abnormal	1 child
5	1 ml. 17½ millions; 45% abnormal		2·75 ml. 19 millions; 80% motile, 50% abnormal	
6	1·8 ml. 12½ millions; 1% motile, 80% abnormal		1·8 ml. 25 millions; 14% motile, 50% abnormal	
7	4·2 ml. 5 millions; 10% motile, 95% abnormal		6·2 ml. 20 millions; 30% motile, 64% abnormal	
8	1 ml. 1 million; 100% abnormal	1 ml. 2 millions; 100% abnormal	1·9 ml. 52 millions; 0% motile, 40% abnormal	0·5 ml. 12 millions; 10% motile, 65% abnormal
9	2 ml. 10 millions; 33% motile, 20% abnormal	3·25 ml. 9 millions; 90% motile, 20% abnormal	3 ml. 88 millions; 90% motile, 40% abnormal	3 ml. 26 millions; 60% motile, 60% abnormal
10	2 ml. 4 millions; 0% motile, 90% abnormal. (History of G.C. infection)		1·2 ml. Azoospermia	
11	2 ml. Azoospermia	1·4 ml. Azoospermia	1 child	1·8 ml. Only two spermatozoa found in whole specimen
12	3·1 ml. Too few to count; 0% motile, all abnormal		3 ml. 48 millions; 55% motile, 23% abnormal	5·2 ml. 24 millions; 25% motile, 25% abnormal
13	5 ml. 15 millions; 30% motile, 10% abnormal	3·2 ml. Too few to count; 100% abnormal	4 ml. 36 millions; 0% motile, 16% abnormal	
14	2 ml. 20 millions; 20% abnormal		1 child (no further test)	

The numbers of spermatozoa apply to those contained in 1 ml. of fluid.
Motility estimates made at 6 to 8 hours after collection except where otherwise stated.

when azoospermia occurs in association with obstructed tubes the underlying fault is nearly always gonorrhoea in both partners. Four other men who had azoospermia were married to women who had either permanent amenorrhoea and were not ovulating, or menstruated and ovulated very infrequently.

If the husband has only moderate impairment of fertility then the correction of infertility factors in the wife (e.g., replacement of retroversion, dilatation of the cervix, or cauterization of the cervix to make it less hostile, etc.) should be carried out. If the number of normal spermatozoa in the fluid is small and cannot be improved, then it may still be possible to facilitate conception by taking all possible steps to give them every chance of entering the uterus undamaged. In other words, if the fertility of the husband is low it may to some extent be cancelled out by improving the fertility of the wife. In six cases where the husband was considered to be at fault pregnancy followed immediately after dilatation of the cervix or some simple form of treatment applied to the wife, the husband remaining untreated.

Artificial Insemination, Using the Husband's Semen.—The artificial implantation of the semen of the husband into the vagina, cervical canal, or uterus of the woman is by no means a new procedure, and according to Halbrecht (1944) was successfully carried out by John Hunter and Marion Sims. There can be little objection to it save on aesthetic and religious

in two out of 28 cases, and nine out of 30 cases, respectively (Halbrecht, 1944; Barton *et al.*, 1945). This form of treatment was employed in six cases in this series. Two women have had children as a result, and a third had an ectopic pregnancy. In all three cases the inseminations were carried out by the husband—after instruction in the technique. In the case of ectopic pregnancy the insemination cannot be blamed, because the wife had pelvic adhesions with damaged tubes—although this was not realized at the time. The indications in these three cases were a hostile cervix, wide variations in the quality of the semen with possible cervical hostility, and impotence. In the other three cases one woman had damaged tubes (undiagnosed) and suffered an exacerbation of salpingitis after intracervical insemination; one had had the cervix torn off during a difficult labour; while in the third the man had grossly impaired spermatogenesis. However, in none of these three unsuccessful cases were inseminations carried out over a longer period than two menstrual cycles.

Summary of Results.—In addition to four of the 13 men suffering from impotence alone, 26 of the 169 men found to have seminal faults have been responsible for at least one pregnancy since their investigation and the treatment of either themselves or their wives, or both. In nine cases the occurrence of pregnancy immediately after treatment has seemed to indicate a connexion between the two. Any more definite statement seems

unjustifiable, and, bearing in mind how large a part is played by chance in the occurrence of pregnancy, it is perhaps wiser to make no claims for any "cures."

Foetal Abnormalities and Defective Semen.—It has sometimes been urged that male infertility should not be treated, nor should a man with semen of poor quality be encouraged to have a child, because of the possibility of the ovum being fertilized with a faulty spermatozoon, resulting in a malformed child or one deficient in some way. Nevertheless, a relationship between defects in the child and defects in the semen has not yet been established, and Lane-Roberts *et al.* (1939) report negative findings in this respect. In this series only one woman had a malformed child—and that before investigation of infertility—and the seminal fluid of the husband was of reasonably good quality. There are also reports in the literature which indicate that the incidence of abortion is higher when the man's fertility is low. The figures in Table VI are perhaps in keeping with this suggestion, but they certainly do not permit any definite conclusion to be drawn.

Assessment of the Value of Criteria of Male Infertility

In the assessment of male infertility arbitrary standards for the various characters of the semen have to be adopted. It remains to be asked how much value can be placed on these standards when applied to the individual case. Table VI shows

TABLE VI.—*Table showing Fertility Before and After Treatment in those Cases Subjected to Semen Analysis*

Seminal Findings	No. of Cases	No. of Cases not Followed Up	No. of Cases with Absolute Sterility in Wife	No. with Preg. Before Test	No. with Preg. After Test and Treatment	No. with Preg. both Before and After Test
"Normal"	108	29	17	4	35 (3)	4 (1)
Over 100 million sperms per ml.	65	12	9	12 (5)	11 (3) (1 ect.)	4
61–100 million sperms per ml.	49	9	6	8 (4)	10 (1) (1 ect.)	2 (2 ect.)
51–60 million sperms per ml.	15	1	4	2 (1)	2	—
41–50 million sperms per ml.	13	4	—	2	2	—
31–40 million sperms per ml.	5	1	—	2 (2)	—	1
21–30 million sperms per ml.	29	4	4	5 (3)	5	1
11–20 million sperms per ml.	20	2	1	3 (2)	4 (1)	1
3–10 million sperms per ml.	26	2	1	4	2	—
2 million and under sperms per ml.	20	2	1	2 (*a*)	2	—
Varying between azoospermia and extreme oligozoospermia	4	—	—	—	1	—
Persistent azoospermia ..	38	5	—	1 (1)	1 (*b*)	—
Low volume and total sperm population less than 50 millions	3	1	—	—	1	—
Low volume alone	2	—	—	—	1	—
More than 50% sperms abnormal. Count more than 30 million per ml.	12	3	1	2 (1)	3 (1)	1 (1)
Necrozoospermia and asthenozoospermia as main fault	10	—	—	4 (1)	2	1
Semen "unsatisfactory"; ? azoospermia	5	1	—	—	—	—

(*a*) Both had mumps after birth of child—orchitis in one.
(*b*) Azoospermia to two tests. Further test after pregnancy revealed only two spermatozoa. Pregnancy followed immediately after treatment.
The figures in brackets indicate the number of patients who had had abortions only. These are also included in the figure preceding the brackets.
ect. = ectopic pregnancy.

how many men, classified according to their semen analysis, have proved themselves capable of procreation, either before or after the test. In general the results show that a high proportion of men with a sperm density of over 60 million per ml. are fertile, but it is surprising that 11 men with a sperm count between 21 and 30 millions and eight men with a count between 11 and 20 millions were responsible for pregnancies in their wives. In eight of these 19 cases, however, the pregnancy occurred before the test, and it is possible that spermatogenesis had subsequently deteriorated. Of the 11 whose wives conceived after the test only one had gonadotrophic hormone therapy, and in none was a later rise in sperm count demonstrated. Six men with a count of 3 to 10 millions also had children—four before investigation and two afterwards—again without any proof of improvement in spermatogenesis.

Of 62 men suffering from azoospermia or oligozoospermia to the extent of not more than 2 million per ml., three had impregnated their wives before the time of the test. This again is perhaps of little significance, since conditions may have changed between the time of the pregnancy and the time of the test; they certainly had in one case, for the husband had had mumps with orchitis. However, four men were responsible for children after the test, and the details are important enough to state.

(1) Azoospermia to two tests. Treatment with gonadotrophin was given, and the wife immediately conceived. The semen was examined again nine months after conception; only two amotile spermatozoa were found in the whole specimen.

(2) Repeated seminal analysis over several years gave such bad results (details unobtainable) that artificial insemination with donated semen had been previously carried out. A child resulted, and eight months later the wife was surprised to find herself pregnant again, the husband undoubtedly being the father. Semen was examined four times soon after the husband had proved his fertility. Azoospermia was found on two occasions, very few spermatozoa on one occasion, and 3 million per ml. at the fourth test. No morphologically abnormal spermatozoa were ever found.

(3) and (4) Both were men with counts of less than 2 million per ml.; neither received treatment, yet both had children.

Another man had azoospermia and testicular atrophy following mumps. He and his wife were both killed during an air raid, but it is stated by friends that she was pregnant at the time. In the absence of further evidence, however, this statement cannot be accepted.

There are several published reports of pregnancy resulting from semen containing only 2 million spermatozoa (see Lane-Roberts *et al.*, 1939; Hamblen, 1945), so in this respect these findings are not remarkable; but pregnancy under such circumstances is not common, and when it does occur it is usually found that of the few spermatozoa present in the semen the majority are well formed. Azoospermia (to two tests) is, however, so often regarded as evidence of absolute sterility that the two cases quoted above deserve emphasis. The most likely explanation is that in these cases the men suffered from some mechanical obstruction in the epididymis or vas rather than defective spermatogenesis, and that the obstruction was not quite complete, so a batch of healthy spermatozoa occasionally leaked through. One man did have a history of mild epididymitis, not of gonococcal origin.

Table VI seems to indicate that so far as sperm density is concerned the standard for reasonable fertility should not be placed too high—and certainly not higher than 30 million per ml. Indeed, unless other unsatisfactory features are present there is much to be said for not diagnosing serious impairment of fertility providing the count is not higher than 10 millions. It should be noted, too, that of 12 cases in which the significant finding was a high percentage of morphological abnormalities, without reduction of the sperm population below 30 million per ml., pregnancy occurred in six. Also, seven out of ten men credited with necrozoospermia or asthenozoospermia were responsible for at least one pregnancy. It would look as though these features alone are not of great significance and that the number of spermatozoa is the best indication of fertility. This statement, however, should be qualified, because pregnancy seems a reasonable possibility if the oligozoospermia is not associated with morphological abnormalities. If a poor semen does not always mean that a man is sterile, then neither does a semen with good characters inevitably mean that he is fertile. This latter is difficult to prove, but the circumstances of some cases provide suggestive evidence—for instance, Seymour (1939) records an extraordinary case in which a man's semen containing 94 million apparently normal spermatozoa per ml. was used to inseminate 16 healthy women and none of them conceived. Yet all the women became pregnant when another donor was used, and so did the wife of the first man. These facts do not mean that male infertility is less prevalent than has previously been stated, but rather that simple seminal analysis as carried out at present is not always an accurate guide. They bring to light the necessity for further inquiry into the characteristics of fluid and cellular constituents of semen and their relationship to fertility. Above all, they serve to emphasize the difficulty in prognosis in any given case. This difficulty is likely to remain even after the most exhaustive seminal studies, and a freak or random pregnancy may result when the chances as assessed scientifically are infinitesimal. Great caution is therefore required in assessing the outlook in

any given case; indeed, it would seem that it is practically impossible to say that a man, or for that matter a woman, is sterile until he or she has died without issue.

For the majority of semen examinations I am indebted to Dr. C. V. Harrison and his staff in the Department of Pathology in the University of Liverpool, who at all times, and often at great inconvenience to themselves, co-operated willingly and gave valuable help.

Summary

From an analysis of 491 private cases and 252 hospital cases it is estimated that not less than one-third of the husbands of infertile marriages have impaired fertility. Of the husbands examined by semen analysis 40% showed evidence of subfertility.

Figures are given to show that responsibility for one pregnancy is unreliable evidence of a man's fertility.

The types of male infertility encountered in 183 cases are set out and some account given of their causes, their treatment, and its results. Of these men thirty have since been responsible for at least one pregnancy.

The results are given of semen analysis before and after treatment with serum gonadotrophin in 14 cases.

The criteria used in the assessment of the findings on simple semen analysis are examined, and attention is drawn to the need for caution in the interpretation of the results and in giving a prognosis in any one case.

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TREATMENT OF CARCINOMA OF THE PROSTATE BY PERURETHRAL RESECTION AND STILBOESTROL*

BY

H. T. COX, M.D.Camb., F.R.C.S.Ed.

Surgical Specialist (Temp.), Withington Hospital, Manchester Municipal Service

This paper deals with a personal series of 30 consecutive cases of late carcinoma of the prostate admitted to Withington Hospital during the past four years. These cases share certain points in common. All showed definite extracapsular spread—either locally, in the form of fixation or extension, or generally, as radiological bone secondaries. Perurethral resection was carried out in every case. In those associated with a major degree of urinary retention the routine treatment was early and adequate resection, followed by the administration of stilboestrol. In those with metastatic symptoms, in the absence of urinary symptoms, the resection was limited, and constituted a biopsy only. The diagnosis of malignancy was confirmed beyond doubt by microscopical examination; pathological grading according to Muir's (1934) classification was established in each case. The importance of microscopical examination is well illustrated by one case in which enucleation had been performed for occult carcinoma in 1940, followed two and a half years later by a suprapubic cystostomy for recurrent obstruction. A perurethral resection carried out in an attempt to close the suprapubic cystostomy removed 15 g. of tissue which showed the presence of a squamous carcinoma, arising from squamous metaplasia of glandular epithelium, and thus made clear the cause of stilboestrol failure. This series does not include any case of occult carcinoma—i.e., an early focus of malignancy, first detected by microscopical examination after enucleation.

* A paper read before the Manchester Surgical Society, November, 1945.

The initial symptoms in four cases were due to spinal metastases. Three of these patients were bedridden because of pain for periods of three months, two months, and five weeks respectively before admission. In the fourth case the metastases had produced a compression paraplegia up to D 10 of three months' duration. The remaining cases were admitted with acute retention (9), chronic retention type 1 [Cox, 1945] (7), prostatic dysuria (8), and permanent suprapubic cystostomy (2). Three patients in the prostatic dysuria group suffered from sciatic pain. Four cases had previous suprapubic "prostatectomy" performed—two for occult cancer, the symptoms recurring in two and a half and four years, and two for clinically diagnosed cancer, the symptoms recurring in three and eleven months respectively. The data for all the cases are given in the accompanying Table.

Results of Treatment

1. *Perurethral Resection.*—Normal micturition was restored in every case except one—a patient, weighing 22 st. (140 kg.), in whom the external sphincter was unfortunately damaged, producing stress incontinence during the day, nocturnal micturition being normal. No case has yet returned with symptoms of local recurrence, though one returned with a vesical stone and cystitis. This patient failed to attend the follow-up clinic and therefore did not continue with stilboestrol. In this series, which includes five patients over 80, there was one post-operative death, occurring in a patient aged 84. The highest blood urea figures in the chronic retention group were 206 and 103 mg. per 100 ml., occurring in patients aged 83 and 84 respectively. After decompression, controlled by means of intravesical pressure readings, the blood urea figures returned to normal and the patients were successfully resected. Out of the 20 cases in which the urine was personally examined in the follow-up clinic, 3 were definitely infected, 2 had mild infection, and in 15 the urine was crystal-clear.

2. *Stilboestrol.*—The most obvious effect of stilboestrol therapy is unquestionably the dramatic and rapid relief of metastatic or sciatic pain. There has as yet been no failure to produce complete initial relief from this pain. The three patients bedridden with spinal metastases were relieved of pain in four days and out of bed in seven. Initial bone secondaries, where present, have on the whole shown a slow but steady increase in extent. Only one case without initial bone secondaries has so far developed them. The inference from this with regard to early treatment is clear. The majority of cases have shown a varying degree of prostatic softening after some weeks' treatment. The result of stilboestrol in restoring for two and a half years the power of walking to the patient bedridden with compression paraplegia and a complete subarachnoid block is worth a more detailed account. In this patient a left adrenalectomy was carried out in a last attempt to reduce the androgen level.

Case 7.—Aged 45. Admitted to another hospital in August, 1942, with compression paraplegia up to D 10, retention of urine, and incontinence of faeces (preceding nine months' history in which the patient was intermittently off work because of lumbar pain). Notes state: "Left leg, complete flaccid paralysis; right leg, practically complete flaccid paralysis. Sensory loss to pin-prick and cotton-wool up to D 10. Skiagram: Secondary deposits in D 10, ilium, and sacrum. Cerebrospinal fluid: Xanthochromia with massive coagulation; protein, 2.5%; globulin opalescence (Pandy); W.R. negative. Primary lesion was considered to be in the prostate as a result of rectal examination. Patient regained voluntary control of micturition 10 days after admission, on tidal irrigation. Course of deep *x* rays given, with no improvement." Admitted here November, 1942, with three months' paraplegia. Diagnosis confirmed by resection; case graded Muir Type 2. Stilboestrol 5 mg. daily by intramuscular injection, with 1 mg. three times daily by mouth. Three months later the patient was able to stand by himself. Left epididymo-orchitis developed after resection. Left testis, under combined influence of inflammation and stilboestrol, disappeared. Right testis normal. Improvement continued until the patient could walk two miles with the aid of one stick, and he returned to work. Stilboestrol was continued after discharge in doses of 30 mg. daily (10 mg. thrice daily). Softening of his prostate took place, so that on rectal examination there was no definite evidence of carcinoma. Fit until April, 1945, when he was readmitted with ten days' history of lumbar and sacral pain, increasing in severity until it confined him to bed. Skiagrams showed "secondary deposits in D 5, 10, and 12, and L 1 and 2." Acid serum phosphatase, 2.7 units per 100 ml. Relief of pain by

changing to dienoestrol 30 mg. daily—i.e., by increasing the dose to the equivalent of 90 mg. of stilboestrol daily. Discharged and returned to work. Readmitted August, 1945, with severe cervical and cranial pain. Skiagram: "Secondary deposits in cervical spine and skull." August 17: acid serum phosphatase, 4.5 units per 100 ml. August 18: orchidectomy. August 28: acid serum phosphatase, 6.4 units. Sept. 6: acid serum phosphatase, 7.5 units. No symptomatic improvement and no reduction in acid serum phosphatase followed orchidectomy, the explanation being provided by microscopical examination of the testis, which showed marked degeneration. Androgen estimation of the urine showed 6.2 mg. 17-ketosteroids in 24 hours. On Sept. 7 I removed the left adrenal in an attempt to obtain a further reduction in androgen. The patient survived the operation for a few hours only.

Many patients while on stilboestrol appear to be unaffected by the existence of spinal metastases. One patient, active for his age (76), has had secondaries in the lumbar spine and pelvis for two years and additional secondaries in the skull for the last nine months. A second patient, admitted bedridden with secondaries in the spine and pelvis, has been back to work for two years. His skiagram now shows further involvement of the spine and secondaries in the skull. He is symptom-free, is active, and has gained in weight.

The following are observations based on the experience of this series.

Analysis of Cases

Case No.	Age	Initial Acid Serum Phosphatase (K.A. Units)	Perurethral Resection		Path. Grading (Muir Group)	Initial Bone Metastases	Survival Period
			Date	Weight (g.)			
1	82	4·1	Nov., 1941	10	2	Neg.	4 yrs.
2	74	—	Mar., 1942	8	1	,,	3 yrs. 2 mths.; died hemiplegia
3	74	—	May, 1942	17	2	Early in pelvis	1 yr. 8 mths.; died at home. ? cause
4	56	—	July, 1942	8	3	Neg.	3 mths.; died metastases
5	73	1·2	Sept., 1942	14	2	,,	1 yr. 11 mths.; died pyelonephritis (vesical calculus)
6	75	42·0	Oct., 1942	4	2	Early in pelvis. ——→ Neg.	3 yrs. 1 mth.
7	45	2·1	Dec., 1942	6	2	Dorsal, lumbar spine, and pelvis	2 yrs. 9 mths.; died metastases
8	49	2·8	June, 1943	8	2	Neg.	2 yrs. 5 mths.
9	57	0·8	Mar., 1943	5	2	Dorsal spine and pelvis + +	2 yrs. 8 mths.
10	63	0·6	April, 1943	31	2	Neg.	2 yrs. 7 mths.
11	83	1·1	June, 1943	11	1	Lumbar spine and pelvis + +	2 yrs. 5 mths.
12	84	2·1	June, 1943	27	3	Lumbar spine and pelvis	6 mths.; died senility (? metastases)
13	75	0·5	July, 1943	15	Squamous carcinoma	Neg.	3 mths.; died pyelonephritis; recto-vesical fistula
14	66	3·8	July, 1943	11	1	,,	2 yrs. 4 mths.
15	74	1·8	Aug., 1943	9·5	1	,,	2 yrs.; died uraemia; occlusion both ureters
16	84	1·8	Sept., 1943	10	2	,,	Post-operative death; pyelonephritis
17	58	2·7	Feb., 1943	5	3	Cervical, dorsal, lumbar spine, and pelvis + +	Home against advice; presumed dead
18	76	10·1	Sept., 1943	12	2	Pelvis and lumbar spine + +	2 yrs. 2 mths.
19	62	2·0	Nov., 1943	4	3	Dorsal, lumbar spine, pelvis, and femoral heads + +	2 mths.; died congestive heart failure
20	68	2·6	Nov., 1943	10	2	Dorsal, lumbar spine, and pelvis	8 mths.; died after operation for cancer of colon
21	67	2·2	Feb., 1944	18	1	Neg.	1 yr. 9 mths.
22	65	4·6	Feb., 1944	10	1	,,	1 yr. 9 mths.
23	74	6·4	Feb., 1944	2	Fibrous	Neg.–Pos.	10 mths.; died motor accident
24	57	2·6	Mar., 1944	8·5	3	Early in pelvis	1 yr.; died metastases
25	69	5·4	May, 1944	4	2	Neg.	1 yr. 6 mths.
26	71	8·8	Feb., 1945	22	1	Lumbar spine, pelvis, and parietal bones	9 mths.
27	82	2·0	April, 1945	9	2	Neg.	5 mths.; died hemiplegia
28	67	5·2	Aug., 1945	12	2	? In dorsal spine	3 mths.
29	63	58·0	May, 1945	1·2	2	Early in pelvis	4 mths.; died metastases
30	71	9·3	Sept., 1945	6	2	Pelvis and lumbar spine	2 mths.

The acid serum phosphatase estimations in Cases 7 and 17 were made shortly after stilboestrol therapy was started. Case 4 returned one month after discharge with rapidly extending spinal metastases and was first given stilboestrol after readmission. The ages are those at the time of resection. Those patients not written up as dead in the last column are fit for their respective ages.

Perurethral Resection

Two instruments are in common use for perurethral prostatic resection—the McCarthy diathermy loop and the Gershom-Thompson cold punch. The instrument used in this series was the cold punch. The choice of instrument is, I believe, more than one of personal preference. The change over from the diathermy loop to the cold punch followed a skilful demonstration of the latter by Wardill at Newcastle, with a standard of efficiency and a quality of results not attainable with the diathermy loop. The diathermy loop, with its mass coagulation, must leave behind a slough proportionate in size to the amount of tissue removed. Increasing experience with perurethral resection brings with it increasing ability to resect larger prostates and therefore the certainty of leaving behind larger sloughs. This either exposes the patient to the dangers of sepsis or, by excluding these larger prostates, limits the surgeon in his selection of cases. But if the full benefit of the perurethral route is to be obtained large prostates must be fully resected. Increasing experience with the cold punch and its pin-point coagulation of individual bleeding-points imposes no such handicap.

Three methods exist for the relief of malignant prostatic retention—perurethral resection, suprapubic resection, and suprapubic cystostomy. The object of perurethral resection in this series has been to remove as much malignant tissue as possible down to the prostatic capsule and, where necessary, from all four quadrants. No attempt has been made to "gutter" or "channel" the prostate, except in those cases where the extremely poor condition of the patient has imposed this limited resection or where the operation has been in the nature of a biopsy on a small prostate without urinary symptoms.

The certain and easy identification of the anatomical boundaries—the prostatic capsule and verumontanum—by the perurethral route, and the inability to identify the same structures by the suprapubic route, ensure a larger removal of growth by the perurethral than by the suprapubic route. If boundaries cannot be identified with certainty surgical excision must stop short to avoid damage to them. Suprapubic resection therefore becomes, in the type of carcinoma under discussion, a disproportionately severe method of removing less tissue, with a diminished chance of restoring normal micturition or an increased likelihood of a return of symptoms. Caulk (1937), in advocating perurethral resection, wrote: "I see little reason for palliative suprapubic cystostomy for the obstruction of cancer of the prostate. I have been shocked to read of its advocacy in many articles and in discussing the subject with many surgeons."

As an alternative method to early and adequate resection in the treatment of urinary retention suprapubic cystostomy followed by stilboestrol has been advocated. Suprapubic cystostomy, however, is associated with a mortality rate estimated at from 15 to 25%. Perurethral resection is in my opinion a more certain, safe, and rapid method of restoring normal micturition.

Pathology

The treated case of carcinoma must constantly be viewed against the background of the untreated case, the life history of which is mainly determined by its degree of pathological malignancy. The pathological grading of the resected material

therefore becomes an essential preliminary step. As sections of carcinoma of the prostate show a well-known variation in appearance in different parts of the same tumour, the tissue examined must be adequate in amount and vary in position. The tissue removed by a full perurethral resection—in this series in amounts up to 31 g.—fulfils both these requirements. Pathological grading according to Muir's classification was carried out in every case.

This classification is into three groups according to the tendency of the growth to form prostatic tubules. In group 1 tubule formation is a prominent feature, mitotic figures being absent. This group represented 25% of 48 cases examined by Muir. In group 3 the bulk of the tumour is undifferentiated, being composed of masses of spheroidal cells with little or no attempt at tubule formation. This group represented 25%. The remaining 50% were placed in group 2, and represented intermediate pathological types. In Muir's series post-mortem examination of 24 patients dying from cancer of the prostate revealed metastases in all of group 3 (6 out of 6), most of group 2 (12 out of 14), and one of group 1 (1 out of 4). Furthermore, the survival periods obtained in group 1 were rather more than double those in group 3. Group 2, while occupying a position intermediate between 1 and 3, shows a closer approximation to group 3 with regard to survival periods and bone metastases.

In support of this established connexion between survival periods and pathological grading, Barnes (1942) considers "it is probable that the survival period in a patient can be more accurately prognosticated from the degree of malignancy discovered than from any other source of information." The data from this short series provide evidence in further support of this view. Of 7 patients placed in group 1, only two had initial bone secondaries. In one of these there was no increase and in the other slight increase in the extent of bone secondaries during treatment. None of the other patients subsequently developed bone secondaries. Two patients have died—one from malignant occlusion of both ureters, surviving a period of two years after resection, the other from hemiplegia three years and two months after resection. The remainder are alive and well.

Case 2, Group 1.—Aged 74. Admitted with retention of urine July and December, 1938. On first admission diagnosed as probable carcinoma on rectal examination. On both these occasions retention relieved by urethral catheterization. Readmitted January, 1942, with a third attack of retention. Blood urea, 86 mg. per 100 ml. Routine decompression and perurethral resection. No stilboestrol given at any time. Micturition completely normal until death from hemiplegia in May, 1945. Acid serum phosphatase, 0.6 unit per 100 ml. No bone secondaries. On rectal examination no change in prostate, which remained large, hard, nodular, and fixed.

As illustrating the correlation between clinical progress and pathological grading, this case is of especial interest. The patient, without any hormone therapy, lived three years and two months after resection for a pathologically proved carcinoma and an additional preceding three and a half years with a clinically diagnosed carcinoma, finally dying of an unassociated disease at the age of 77.

Very dissimilar is the clinical picture of the five cases in group 3. One, originally free from bone secondaries, was readmitted with bone secondaries one month after discharge. These rapidly increased, leading to a fatal termination. The remaining four cases all had initial bone secondaries—massive in two, marked in one, and early in one. This last case developed a fatal increase in secondaries within 12 months:

Case 24.—Prostate hard, irregular, and fixed. Skiagram: "Early secondary deposits in right ischium." Acid serum phosphatase, 2.6 units. Routine decompression and perurethral resection. Stilboestrol 30 mg. daily by mouth. Three months later urine clear, micturition normal, nocturnal frequency 0–1. Small residual mass on rectal examination. Stilboestrol reduced to 5 mg. daily. Five months later patient developed two severe attacks of lumbar pain radiating down both legs. Skiagram: "Further sclerosis in pelvis and spine." Acid serum phosphatase, 30 units. Urine clear, micturition normal. Stilboestrol increased to 30 mg. daily. This reduced acid serum phosphatase to 0.9 unit, with cessation of attacks of pain. Patient did not again attend clinic. Letter from doctor states that he went steadily downhill, became confined to bed because of pain in hip—unrelieved by stilboestrol—weakness, and breathlessness, and died three months after his last attendance.

The advantages of pathological grading are very clear: (1) First and foremost it provides, especially in groups 1 and 3, an approximate survival period for each case. A lack of this knowledge may render fallacious any attempt to interpret, in terms of survival periods, the benefit of oestrogen therapy or, indeed, any other therapy. The enthusiasm of the stilboestrol era should not be permitted to mask pathological principles. (2) Therapeutic requirements should be affected by a knowledge of the pathological grading. Group 3 cases certainly require maximum treatment. (3) In only one case did bone secondaries develop after resection with such rapidity as to incriminate the operation as a possible cause. Pathological grading showed this case to belong to group 3. The malignant dissemination was therefore attributed to the high degree of malignancy rather than to operative trauma.

Acid Serum Phosphatase

The value of this test is largely dependent on the existence of a well-defined line dividing the normal from the abnormal figures, and the incidence in any series of raised acid serum phosphatase figures depends on the level at which this line is drawn. The upper limit of normal in this country is usually accepted as 2.5 King-Armstrong units per 100 ml. Huggins *et al.* (Huggins and Hodges, 1941 ; Huggins, Scott, and Hodges, 1941) give the upper limit of normal as approximately 4 units (3.25 ± 1.37), and have found that figures of 10 or over are diagnostic of carcinoma with secondaries. No case of a false positive has been recorded in his series, the word "positive" being taken to refer to a figure of 10 or over. Advanced Paget's disease constitutes the only exception ; in this, however, there is an extremely high level of alkaline phosphatase as opposed to the very moderate elevation found in carcinoma of the prostate. A rational estimation based on these figures would classify acid serum phosphatase estimations into three groups—those below 4 units per 100 ml. as normal, those between 4 and 10 as suspicious, and those at or over 10 as diagnostic of carcinoma with secondaries. The data provided in the preceding table show that this series strongly supports this classification. Using the reading of 2.5 units as the upper limit of normal, five patients had acid serum phosphatase estimations above this figure and yet were found to have no initial bone secondaries ; nor were secondaries subsequently discovered on repeated examination over an adequate period of time. The practice of recording the acid serum phosphatase estimation to the first decimal place and sometimes even to the second gives to the test a degree of accuracy which in its clinical application it has not been found to possess. This practice may well be discarded.

Of the 12 patients with radiological bone secondaries in whom initial acid serum phosphatase estimations were made, six showed a normal reading (0.8, 1.1, 2.1, 2.0, 2.6, 2.6 units), three a diagnostic rise (42, 10.1, and 58 units), and three a suspicious rise (8.8, 5.2, and 9.3 units). False negatives (carcinoma with bone secondaries and a low acid serum phosphatase) are known to occur, but the incidence of them in 50% of cases is sufficient to limit the value of the test and to discredit the value of all normal readings. It is only raised acid serum phosphatase estimations that are of value. One case previously described, with spinal metastases and on stilboestrol 30 mg. daily, developed severe root pains without any increase in the acid serum phosphatase. Another case, also on stilboestrol 30 mg. daily, developed for the first time definite bone secondaries in the lumbar spine and pelvis with no rise in the acid serum phosphatase. These experiences show how fallacious the practice, frequently advocated, may be of relying on the acid serum phosphatase estimation for the control of stilboestrol dosage. With regard to the association between acid serum phosphatase and pathological grading, the three high initial figures were obtained in group 2. It has been suggested that the presence of a raised acid serum phosphatase indicates a serious prognosis. It is rather the failure to reduce such a raised figure, or the progressive and substantial rise of any figure, on an adequate stilboestrol dosage that constitutes a serious prognostic sign. The following case—the only one in which there was failure to reduce a raised acid serum phosphatase—illustrates this point.

Case 29.—Suprapubic resection elsewhere for clinically diagnosed carcinoma of the prostate, 31/1/44. Acid serum phosphatase, 3.2 units. No radiological secondaries. Triphenylchlorethylene given. Readmitted 21/12/44 with dysuria, incontinence, and residual urine 15 oz. (425 ml.). Dienoestrol 20 mg. daily for four months with no improvement. 20/2/45: A.S.P. 26 units per 100 ml. Admitted

here 24/5/45: A.S.P., 58 units. Skiagram: "Irregular sclerosis left pelvis; maybe early secondaries. *Nil* in skull, dorsal or lumbar spine." Inguinal glands enlarged. Perurethral resection, 24/5/45, removing small obstructing nodule near external sphincter, proved on section to be malignant. Residual urine reduced to 1/2 oz. (14 ml.), with complete relief of urinary symptoms. Given 30 mg. dienoestrol daily. A.S.P. (alternate days), 65, 76, 88, 105, 72 units. Home against advice. Returned three weeks later with liver hard and enlarged to umbilicus; inguinal glands larger; A.S.P., 80 units. Bilateral orchidectomy, 8/8/45. A.S.P. still 80 units (28/8/45), with no clinical improvement. Home against advice and died two days later.

Oestrogen Therapy

1. *Dosage.*—"The correct dosage of an endocrine preparation is not a subject for generalization but rather for individualization" (Cameron, 1945). The truth of this statement is shown by at least two case histories. In Case 24 (Muir 3, previously described) the development of sciatic pain, raised acid serum phosphatase, and spinal metastases followed the reduction of stilboestrol from 30 mg. daily to 5 mg. daily. Reverting to the original dose of 30 mg. daily relieved the pain and lowered the acid serum phosphatase to normal. This case also illustrates the disastrous results that may follow continuing treatment on a lowered maintenance dose—a practice often advocated—even when the dose is reduced at a time when the malignant process appears, both clinically and pathologically, to be under control. In the second case severe lumbo-sacral and sciatic pain, intense enough to confine the patient to bed, was completely relieved by changing from stilboestrol 30 mg. daily to dienoestrol 30 mg. daily. (Dienoestrol is stated to be three times as active oestrogenically as stilboestrol.) In the first case 30 mg. of stilboestrol daily proved to be an adequate dose; in the second case it was inadequate.

These cases demonstrate clearly that an apparent stilboestrol failure may be due to an actual error in dosage. The impression gained from the literature, especially American, is that the dosage of stilboestrol administered has been too low. One author states that he found castration alone more effective than oestrogen alone. The explanation of this anomaly he himself provides by stating that the dose of stilboestrol given was "one or more milligrams daily." I believe the dose of stilboestrol should be large, that it should never be lowered in group 3 cases, that it is wiser not to lower it in group 2, and that it is safe, subject to the results of repeated examinations, to lower it in group 1. My practice in the later cases of this series has been to begin treatment on 30 mg. stilboestrol daily.

2. *Cardiac Complications.*—Four patients have developed cardiac complications while on stilboestrol. This has been accepted as a disquieting incidence, although in this advanced age group the association of degenerative changes with any form of treatment may be more apparent than real. In three cases acute congestive heart failure developed—in the first after three weeks on stilboestrol 20 mg. daily by mouth, in the second after six weeks on stilboestrol 5 mg. daily by intramuscular injection, in the third after two years on 15 mg. daily for the first year and 10 mg. daily for the second. Two cases had extensive spinal metastases, and in one of these definite evidence of myocardial degeneration was present before stilboestrol was started. The third case, a patient weighing 22 st. (140 kg.), also had signs of initial myocardial degeneration. The connexion between stilboestrol therapy and cardiac complications was, at any rate, beyond dispute in the fourth case. This patient, an intelligent man under close observation in the follow-up clinic, while on stilboestrol 10 mg. daily developed pain across the front of the lower chest on exertion, increasing in intensity until, after a period of three months, it was induced in a severe form by such mild exertion as getting out of bed. Changing from stilboestrol to dienoestrol relieved this pain. The development of nausea in four cases necessitated a change from stilboestrol. Dienoestrol was substituted in each instance with complete relief. In view of these experiences it is proposed to treat all future cases with dienoestrol in preference to stilboestrol.

3. *Relation to Prostatic Obstruction.*—The early relief of a major degree of prostatic obstruction by stilboestrol in adequate doses has proved a complete failure in the two cases in which it was attempted. Furthermore, a third patient, while in hospital on stilboestrol 20 mg. daily, developed an acute retention with a bladder distension to 1 in. (2.5 cm.) from the umbilicus eleven days after the beginning of treatment. The stilboestrol had in the meantime completely relieved his pain from spinal metastases. Three cases—two with acute retention and one with prostatic dysuria, all subsequently proved to be group 1—were relieved of symptoms by catheterization without stilboestrol for periods of one month, four years, and twelve months respectively. These latter experiences demonstrate clearly that the factors responsible for urinary retention or dysuria may be of a temporary nature even in malignant prostates and that early or immediate relief of such symptoms, if occurring while the patient is on stilboestrol, may be erroneously attributed to it. Reports of immediate or early relief of retention by stilboestrol should be viewed with considerable scepticism.

Orchidectomy.—The two cases in which orchidectomy was carried out after stilboestrol or dienoestrol, in adequate doses, failed to show any improvement either clinically or in reduction of acid serum phosphatase.

Summary

Suprapubic cystostomy and suprapubic resection as methods of relieving malignant prostatic retention are unjustifiable survivals of pre-endoscopic days. Normal micturition can and should be restored by perurethral resection.

The importance of pathological grading in assessing survival periods and of giving and continuing to give oestrogen in adequate doses has been stressed.

Reasons for a proposed change from stilboestrol to dienoestrol have been given.

Observations on the acid serum phosphatase in the blood have been made.

I should like to thank Dr. J. M. Greenwood, medical superintendent, for facilities for treating these patients.

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THE OUTBREAK OF SMALLPOX IN MIDDLESEX, 1944

BY

W. H. BRADLEY, D.M.Oxon
Medical Officer, Ministry of Health

J. O. F. DAVIES, M.D., D.P.H.
Principal Assistant Medical Officer, Middlesex County Council

AND

JAMES A. DURANTE, M.R.C.S.
Formerly Temporary Medical Officer, Ministry of Health

A case of variola major in a large hospital in Middlesex in 1944 was followed by 10 further cases, three of them fatal. The outbreak is thought to be of interest in that the diagnosis was not made in the primary case until the patient was ambulant in hospital, by which time six other persons had been infected—three nurses and a patient in the hospital, a nurse on leave at home, and a visitor. The diagnosis of smallpox in the nurse on leave drew attention to the outbreak. After the isolation of these secondary cases four others occurred.

Case Histories

Case 1.—L. C., a soldier aged 23, had arrived in convoy from Gibraltar on Feb. 6, and had been admitted direct to the hospital on account of an anxiety state. He had slight fever on admission, which became more pronounced on succeeding days. On Feb. 10 an erythematous rash appeared and his temperature rose to 103° F. (39.4° C.). A rubella-like eruption the next day was followed two days later by lesions suggesting chickenpox, so that on Feb. 13 the diagnosis of chickenpox with rubella was made and the patient barrier-nursed in a four-bedded ward until Feb. 24. Later the patient was up and about, and subsequently visited other parts of the hospital. A barber visiting the hospital cut his hair in company with that of a number of other patients.

When seen on March 2, the soldier had a few faint scars on the forehead, a number of seeds in the soles of the feet, one seed under a finger-nail, and a few scabs on the dorsa of the feet. He bore good vaccination marks from infancy, and a single scar from revaccination dated in his Army pay-book Sept. 17, 1942. Nevertheless, the condition from which he had been suffering appeared without doubt to be smallpox.

Case 2.—Nurse E. H., aged 24, unvaccinated, at home in Finchley on leave, became unwell on Feb. 22 with a bilious attack and vomiting. On Feb. 24 she developed a morbilliform rash, and on Feb. 28 vesicular lesions appeared on the hands and fingers. The following day the rash was profuse, and smallpox was suspected by the medical officer of health. This diagnosis was confirmed next day, when the patient showed a confluent early pustular rash on the face, upper chest, and back, with discrete but copious late vesicular lesions on the feet and legs. Many of the papules were haemorrhagic, and the vesicles showed central bluish haemorrhage. Death occurred on March 3.

A history of contact with a case diagnosed as rubella and chickenpox led to a visit to the hospital, with the discovery there of Case 1 and the four cases next described.

Case 3.—Nurse N. P., aged 22, who had nursed Case 1 at night, fell ill on Feb. 22 and reported sick on the 25th. She was admitted to the hospital sick bay that day, and transferred later the same day to a cubicle in the isolation ward as a chickenpox suspect. On March 2 a discrete modified pustular rash of scanty but typical smallpox distribution was present. She had been vaccinated at the age of 3 or 4 years.

Case 4.—Another contact, Nurse M. G., aged 20, vaccinated successfully in infancy, reported sick on the 25th, having been first unwell on Feb. 22. She was admitted to a cubicle in the isolation ward, where chickenpox was diagnosed on the 27th. On March 2 this nurse showed a moderately profuse papular rash of typical smallpox distribution, which (seen later) evolved rapidly with much modification of individual lesions.

Case 5.—Nurse N. B., aged 34, vaccinated successfully in infancy, had also nursed Case 1. This nurse lived at home. She felt unwell on Feb. 26 and went to bed at home, where a diagnosis of chickenpox was revised to smallpox on March 3. When seen later many of the lesions were aborting in all stages of evolution.

Case 6.—This patient, aged 51, suffered from carcinoma of the breast in a ward on the same corridor as Case 1, but separated from him by an intervening ward. The nursing staff, however, were common to the two wards. On Feb. 29 this patient had a temperature of 101° F. (38.3° C.), which rose to 105° F. (40.6° C.) on March 2. Seen the next day, she presented a very profuse bluish purple papular rash of typical smallpox distribution. On the face the lesions were so close as to appear as a uniform coloration of the skin. They were suggestive of a toxic haemorrhagic attack, and this proved to be the case, the patient dying on March 6 with a confluent haemorrhagic eruption little beyond the papular stage. Haematuria, melaena, and metrorrhagia preceded death. The marks of vaccination in infancy were present.

Case 7.—On March 3 it was learned that an unvaccinated woman (M. C.), who on Feb. 12 had visited another officer in the same ward as Case 1, had been taken ill in Bedford on Feb. 22, took to her bed on the 24th, two days before a rash appeared on Feb. 26, and died on March 2. When first seen this patient had a temperature of 103° F. (39.4° C.), and was thought to have measles. Two days later there was a profuse papular eruption of general distribution, but most marked in the flexures, on a dusky red background. There were petechial haemorrhages, giving an appearance of erythema multiforme plus purpura. Oedema of the face and eyelids was marked, as were conjunctival haemorrhages. She died with her case undiagnosed, but it was undoubtedly haemorrhagic smallpox. This completed the secondary cases.

Cases 8 and 9.—On March 9 and 10 F. H. and I. H., two sisters of Case 2, one of whom had nursed her at home for eight days, fell ill and developed a rash, diagnosed as smallpox, on March 12 and 13 respectively. They had been successfully vaccinated on March 2. The eruption in the sister who had acted as nurse was profuse; the other was less so, and she was reported to have had no actual physical contact with Case 2. Both girls recovered.

Case 10.—M. H., an unvaccinated youth aged 17, who had been admitted from another hospital on Feb. 18, was transferred to a cubicle in the isolation ward on Feb. 24 with chickenpox. His cubicle was in the same corridor as that to which Cases 3 and 4 had been moved, all three patients being nursed by the same staff. There was no evidence of any direct contact with the nurse-patients (Cases 3 and 4). When seen on March 2 he had a very profuse chickenpox rash with an abnormally high incidence of lesions on the face and forearms. Despite this, no doubt was entertained that the condition was chickenpox. He was primarily vaccinated that evening, and vaccination developed typically into a large pustule

Table of Principal Clinical Features and Relevant Dates

Case	Age	Successful Vaccination	Source of Infection	Probable Date of Infection	Date of Onset of Symptoms	Date of Efflorescence of Rash	Type	First Day of Exposure to Infection	Remarks
L. C. 1	23	Infancy and 17/9/42	Mediterranean port	27/1/44	7/2/44	10/2/44	Discrete, modified	?	? Prodromal erythema, "chickenpox" lesions on 12/2/44. *Primary case*
E. H. 2	24	None	L. C.	10/2/44	22/2/44	24/2/44	Confluent, haemorrhagic	7/2/44	Died on 3/3/44
N. P. 3	22	Infancy	L. C.	13/2/44	25/2/44	26/2/44	Discrete, modified	7/2/44	? Prodromal erythema. Chickenpox spots noticed on 28/2/44
M. G. 4	20	Infancy	L. C.	13/2/44	25/2/44	28/2/44	Discrete, modified	7/2/44	
N. B. 5	34	Infancy	L. C.	14/2/44	26/2/44	28/2/44	Discrete, modified; scanty rash	7/2/44	First seen with vesicular rash 3/3/44
M. L. 6	51	Infancy	L. C.; fomites	17/2/44	29/2/44	2/3/44	Confluent, haemorrhagic	7/2/44	Died on 5/3/44
M. C. 7	36	None	L. C.	10/2/44	22/2/44	27/2/44	? Purpura haemorrhagica variolosa	5/2/44	Died, undiagnosed, on March 2, 1944. Labelled erythema multiforme
F. H. 8	32	Primary 2/3/44	E. H.	27/2/44	9/3/44	11/3/44	Discrete, modified	22/2/44	Sister to E. H.; vaccinated successfully 9 days after exposure
I. H. 9	19	Primary 2/3/44	E. H.	28/2/44	10/3/44	12/3/44	Discrete, v. modified; scanty rash	22/2/44	Sister to E. H.; vaccinated successfully 9 days after exposure
M. H. 10	17	Primary 2/3/44	N. P. or M. G.	28/2/44	10/3/44	13/3/44	Discrete, profuse	25/2/44	Suffering from varicella. Contracted variola subsequently
F. T. 11	56	Infancy and 6/3/44	N. B.	3/3/44	? 13/3/44	15/3/44	Discrete, profuse, modified	3/3/44	Ambulance driver; took N. B. to smallpox hospital. Successfully vaccinated 1914–18 war. "Failed to take" three times prior to March 6.

The numbers refer to the preceding clinical notes.

with extensive erythema and some adenitis. On the 10th the boy developed slight fever which rose to 105° F. (40.6° C.) on March 12. On the 13th there was a discrete profuse macular rash, contrasting vividly with the scars of the almost faded chickenpox rash. He developed modified smallpox.

Case 11.—The only other case to occur was that of an ambulance driver (F. T.) who removed Case 5 in the early hours of March 3. He was not revaccinated until March 6, and developed a rash on March 15. He had been successfully vaccinated in infancy and during the 1914–18 war. Vaccination was stated to have failed to take three times before March 6.

These cases are set out in the accompanying Table.

Transmission of Infection

Cases 2, 3, 4, 5, and 7 were all direct contacts of Case 1. Case 6 never made actual contact with Case 1, but was attended by the same nurses. Cases 8 and 9 were direct contacts of Case 2. Case 10 was infected from Cases 3 and 4, but without obvious contact. Case 11 was a direct contact of Case 5.

Action taken at the Hospital

The hospital was closed to further admissions; discharges were discontinued, and control measures—vaccination and surveillance of all close contacts—immediately applied. Since the infection had been present in the hospital for a relatively long period before detection, the number of possible contacts, both inside and outside the hospital, was large, and their identification a formidable task. Yet, so long as no unexplained case arose, it was felt that vaccination might be confined to persons

working at the hospital, possible contacts in the neighbourhood, and such visitors as investigation might show to have been possible contacts. Mass vaccination was not advised, but to allay local anxiety and to assist the Public Vaccinator, the medical officer of health of the local authority opened a vaccination clinic, at which those resident in the vicinity of the hospital could be vaccinated if they so wished.

By the evening of March 4 all patients and all members of the staff working at the hospital (approximately 1,100 persons) had been vaccinated, about 120 of them for the first time. On the same evening all members of the nursing, domestic, and laundry staff, etc., were inspected for rash on the head, neck, and arms, and all interrogated as to possible contact with any of the known sufferers. One or two girls who were not feeling well were kept under close observation, and the necessity for reporting sick at once if unwell was made clear to all.

The hospital consists of a main block (the original building) and a number of hutted wards erected as a wartime measure. The cases had occurred in the main block and in the isolation hut. These two buildings were placed out of bounds to all save the staff who worked there. Members of the staff were requested for the time being to limit their contacts and refrain from entering crowded places. For the observation of persons reporting sick arrangements were made to set aside one block containing a number of cubicles and two small wards. This proved extremely valuable for the observation of the numerous vaccinial rashes and reactions which appeared. All members of the staff, resident and non-resident, were kept under daily observation, and any non-resident members not attending for duty were reported to the medical officer of health of their place of residence. The laundry was dealt with in part at the hospital and in part at a public laundry in a near-by town. No infected laundry had gone outside, and arrangements were made that none should go.

Among the nurses who had been previously unvaccinated seven had had close contact with cases of smallpox. These were housed in a separate building in the grounds from March 8 to 16, and did not report for duty. Had smallpox developed in any of these nurses the contact would have been strictly limited to the medical officers observing them and one sister-in-charge. Although one nurse on the twelfth day after contact aroused some anxiety by reason of fever, headache, and backache, she did not develop smallpox.

Case 10 occurred in the isolation ward amongst a well-vaccinated community, and was removed to the smallpox hospital on March 13. From that date this ward was separated by physical barriers from the rest of the hospital. Arrangements were made for the nurses working in the isolation ward to sleep and feed in a nurses' hut next to that ward. No further cases developed from Case 10.

It became clear that the number of persons who might have been contacts was very considerable, and it was decided to notify medical officers of health of all patients discharged from the hospital between Feb. 6 and March 1 and of all visitors during that period. The patients were asked to prepare a list of their visitors between the dates mentioned. Names of visitors known to have entered smallpox wards were notified direct to the medical officer of health of their place of residence; all other visitors received a letter from patients, so worded that when the visitor took the letter as instructed to the medical officer of health it would be clear to the latter that this person was not thought to be in any appreciable danger. In this way it was hoped that the very large number who might possibly have been at risk would be brought under surveillance.

The hospital was freed from quarantine on March 17, with the exception of the main block, the isolation ward, and the ward used for observation cases. On March 20 the main block was freed for the admission of patients after cleansing had been carried out, and the other wards a week later.

Comment

The strain of variola major in this outbreak was of a high degree of virulence. Both the unvaccinated patients died from confluent haemorrhagic smallpox. Also, a modified attack occurred in Case 1; this patient, having been successfully vaccinated in infancy and 18 months previously, might have been expected to escape.

In spite of its virulence the disease was greatly modified by vaccination. The three nurses vaccinated in infancy—approximately 20 years previously—had mild modified attacks. Case 11, vaccinated in infancy and subsequently, was vaccinated four days after exposure and developed a profuse discrete but modified smallpox nine days later. Three previously unvaccinated persons (Cases 8, 9, and 10), vaccinated too late in the incubation period to afford complete protection, sustained modified attacks. The interval between vaccination and the appearance of the rash in those previously unvaccinated was 9, 10, and 11 days, suggesting that vaccination may have been performed on the fifth, fourth, and third days after the infection was contracted.

Wanklyn states that good marks of recent vaccination can be taken as evidence that an eruption is not smallpox. It would appear from Case 1 that this does not hold in the presence of a virulent strain. Nevertheless, the value of successful vaccination in mitigating the severity of an attack of smallpox even when, owing to lapse of time, it may not confer absolute protection, appears to be demonstrated by Cases 3, 4, and 5, whose vaccination dated back to infancy, some 20 years previously. The pronounced modification in Cases 8 and 9, whose sister died from a confluent haemorrhagic attack, appears to have been achieved by vaccination performed five and four days respectively after the infection had been contracted.

Case 1 was so much modified as to deceive competent medical opinion. In nearly all the vaccinated persons the lesions varied greatly in size, a large proportion aborting in the papular or vesicular stage. These lesions, together with the tendency for the rash to run a more rapid course, produced a picture simulating chickenpox, which, associated with the concurrent prevalence of the latter disease in the hospital, added to the difficulties of diagnosis.

After the isolation of the primary case and those infected by that patient, and the complete vaccination of the hospital population and outside contacts, there was no extension of the outbreak in the hospital apart from Case 10. The cases which did occur after the institution of these measures— Nos. 8, 9, and 11—acquired their infection outside the hospital.

Considering the opportunities for spreading the disease afforded by the primary case, by the number of unvaccinated persons in the hospital population, and by the virulence of the virus, the persons infected were remarkably few.

Conclusion

The experience of this outbreak suggests that control was achieved by the careful ascertainment, vaccination, and surveillance of contacts without embarking on the vaccination of the population generally. Of the seven nurses kept under close supervision because they were unvaccinated at the time of intimate exposure to infection, none developed smallpox. Nevertheless, one, as has been described, did develop headache, fever, and backache, and in four well-vaccinated nurses who had handled smallpox patients unexplained pyrexia without rash occurred under circumstances suggesting that they were reacting to the variola virus (Downie, 1946). There was serological evidence for this statement, and undoubtedly the virus was available in the hospital for the infection of nurses and patients. The failure of the disease to spread is attributed to vaccination.

At the present time importation of smallpox by returning Service men is a frequent occurrence. In these men the disease is modified, and may be misdiagnosed. It would therefore seem to be a wise precaution to employ only well-vaccinated persons in general hospitals, as well as in infectious disease hospitals.

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With a view to securing a more constructive type of legislation the National Smoke Abatement Society (Chandos House, Buckingham Gate, London, S.W.1) is putting forward for discussion preliminary proposals for extensions of the Public Health Acts by means of which local authorities could obtain bylaws that will help to prevent smoke and will directly enourage fuel efficiency and coal conservation. Three sets of bylaws are proposed. Details may be had from the society.

A CASE OF MERCURIAL POISONING AND ITS TREATMENT

BY

R. HAYDEN ELLIS, M.B., B.Chir.

A case of acute mercurial poisoning is described below in which there were severe gastro-intestinal symptoms and anuria lasting six days. The 5 ml. of urine passed the preceding day contained red and white blood cells and many hyaline casts—albuminuria was slight; oedema was absent. Recovery set in rather suddenly on the eighth day, when the kidneys began to secrete a pale, low-specific-gravity urine containing microscopical blood, excess of leucocytes, and numerous hyaline and granular casts. The urine was normal by the twenty-fourth day. Apart from symptomatic remedies the basis of treatment was intravenous therapy. In all, 32 pints (18 litres) of fluid were given intravenously.

Report of Case

The patient, a young man of 20, was admitted in March, 1946, with severe abdominal pain, vomiting, and diarrhoea. Sixteen hours before admission he had taken 3 g. of corrosive sublimate in a glass of water. Half an hour later he vomited blood, and suffered severe abdominal pain with the passage of fresh blood per rectum. Three hours later there was frank haematuria. He was seen by a doctor, and given the whites of three eggs in a glass of milk and an injection of morphine, 1/4 gr. (16 mg.). The morphine was repeated in three hours because of great pain and restlessness, and he was then removed to hospital by ambulance. Blood-stained urine was passed during transit, but the specimen was not saved.

On examination the patient looked very ill and was obviously in great pain. There were bouts of colic, followed by the passage of blood-clots and mucus per rectum, about every half-hour. Vomiting was frequent, and the vomit consisted of bile and blood-clots. The mental condition was clear. Abdominal movement was restricted; there was diffuse tenderness, and gentle palpation was followed by violent bowel action and much pain. There was also some tenderness in the loins. His blood pressure was 152/74.

Progress and Treatment

On the second day pain, diarrhoea, and vomiting continued; stools were passed at the rate of one an hour and were darker in colour. During the day the patient passed 5 ml. of urine containing a small quantity of albumin. The centrifuged deposit showed occasional red blood cells, white cells, and many hyaline casts. Kaolin poultices were placed over the loins. Water and sips of iced orangeade were taken. Restlessness and pain were treated with morphine, 1/4 gr. four-hourly. Frequent vomiting continued, and much fluid was lost in the faeces. An intravenous drip was started in the left arm, and fluid was given at the rate of 4 pints (2.27 litres) in 24 hours—namely, alternating pints of dextrose-saline (4.8% and N/5), sodium sulphate (4.2%), and normal saline.

By the third morning the patient was very drowsy and there was twitching in the limbs. The tongue was covered with brown fur, and he complained of severe headache. Morphine, 1/4 gr. four-hourly, and the intravenous drip were continued. He vomited 1 litre during the day, but passed no urine. There was little improvement over the next three days, though the abdominal pain was less and the stools not so frequent. No urine had been passed since the original 5 ml. after admission. The patient was now mentally alert, and worried about himself. Blood urea was 236 mg. per 100 ml., and the patient was very ill. All veins except one had now been utilized, and the intravenous administration of fluid was discontinued. On the seventh day the abdominal tenderness had disappeared, the diarrhoea and vomiting had improved slightly, but the patient was hiccuping continuously. The plantar responses were extensor. Blood pressure, 174/84; blood urea, 350 mg./100 ml. Morphine was changed to heroin, 1/8 gr. (8 mg.) four-hourly, as this was thought less likely to aggravate vomiting.

On the morning of the eighth day the patient's condition was critical. No urine had been passed since the second day (5 ml.). Intravenous therapy had been stopped for 24 hours on account of technical difficulties, and was begun again—namely, dextrose-saline at the rate of 4 pints (2.27 litres) in 24 hours. During the day and following night 1.85 litres of urine was passed, and the patient's condition improved. The next day there was a pronounced improvement: 1.9 litres of urine, of specific gravity 1010, was passed; twitching and headache abated; and the patient was able to take rusks and 1.7 litres of fluid by mouth. Blood urea, 300 mg./100 ml.; haemoglobin, 65%; W.B.C., 21,000.

Over the course of the next three days intravenous dextrose-saline was continued and the diuresis and general improvement were maintained. Vomiting was less, and the patient was able to take solid food in the form of eggs and custard, calves'-foot jelly, rusks, and pounded fish. At the end of this time the last vein had thrombosed, and the drip was discontinued. Blood urea, 380 mg./100 ml.; plasma chlorides, 419 mg. NaCl/100 ml.; alkali reserve, 42 vols. CO_2%; blood pressure, 150/60. The heroin had been discontinued, and phenobarbitone, 1/2 gr. (32 mg.) four-hourly, was given in its place. In spite of the high blood-urea figure the patient felt well and was cheerful.

On the 17th day after admission the blood urea was 170 mg./100 ml.; plasma chlorides, 487 mg. NaCl/100 ml.; alkali reserve, 52 vols. CO_2%. The centrifuged deposit of each specimen of urine passed showed successively diminishing numbers of red and white blood cells, and all showed persisting hyaline and granular casts. On the 24th day the patient was his normal self, eating well, with no vomiting, and passing one semi-solid darkish stool per day. The urinary output was in the region of 2 litres in 24 hours; the blood urea was down to 63 mg./100 ml.; plasma chlorides had been raised to the normal level of 576 mg. NaCl/100 ml., helped by the giving of 5 g. of NaCl daily in a litre of lime-juice; alkali reserve, 56.7 vols. CO_2%; blood pressure, 148/63. The urine contained no albumin and the centrifuged deposit was normal.

THE SYNDROME KNOWN AS "REITER'S DISEASE"

(A TRIAD OF POLYARTHRITIS, URETHRITIS, AND CONJUNCTIVITIS)

BY

W. P. U. JACKSON, M.B., M.R.C.P.

Fl.-Lieut., R.A.F.V.R.; formerly Medical Specialist in the Bahamas

In 1916 Reiter, in Germany, reported the case of a young man in whom the presenting clinical features were the triad of polyarthritis, urethritis, and conjunctivitis. Fever and, at the onset, bloody diarrhoea were also present. The patient made a complete recovery. No previously recognized pathogen was discovered to account for these inflammatory reactions, but Reiter believed he had incriminated a spirochaete, for which, however, there has been no subsequent evidence. This syndrome of the "inflammatory triad" does apparently represent a disease *sui generis*, its aetiology being unknown. Kuske (1939) noted cutaneous eruptions to be frequent concomitants, and others have found a haematuria. Recently Miller and McIntyre (1945), in America, reviewed the condition and found that about 65 cases had been reported, mostly in Germany, some in America (e.g., Bauer and Engleman (1942), 6 cases). In a lecture in this country on keratodermia blennorrhagica, Harkness (1945) remarks in passing upon several cases of Reiter's disease seen by him, and notes that 16 cases have been reported in the literature in combination with this particular skin lesion. Apart from this brief mention I have not found a report on the syndrome in British journals.

Clinical Manifestations

The patient is usually a young adult male, presenting with an irregular fever and any one or more of the triad of essential symptoms. If one (e.g., the arthritis) occurs alone at first, the others (i.e., urethritis and conjunctivitis) develop later. The *conjunctivitis* is bilateral, catarrhal, or, more usually, profusely purulent, with episcleritis and sometimes an iritis or keratitis. There are local pain, weeping, and photophobia, but permanent damage to the eye does not occur. No constant organism can be found in conjunctival smears. The *arthritis* is manifested by severe pain and tenderness, occurs in the large joints of the limbs, is usually polyarthritic and often flitting. Synovitis is frequent, fluid developing rapidly and in considerable amount. This fluid may be purulent, but is always sterile. The *urethral discharge* is abundant and purulent, accompanied by surprisingly little frequency of, or pain on, micturition. Gross haematuria may occur (as in the two cases of Miller and McIntyre) and renal complications have been described. The urine contains red blood cells in varying numbers, clumps of pus cells, and a little albumin. The discharge presents no evident organism and is sterile on attempted culture. Erosions and small ulcers may appear on the penis from the constant irritating discharge.

Diarrhoea, sometimes severe and bloody, may be present at the onset, and several types of more or less generalized rashes have been described. The erythrocyte sedimentation rate is

raised, there may be a mild hypochromic anaemia, and the leucocytes are normal or slightly raised in number. Gonococcal fixation and Wassermann tests are negative. The disease is self-limited, though subject to recurrences, which may drag its course out into months. Complications are very rare.

Aetiology and Differential Diagnosis

Harkness claims to have demonstrated inclusion bodies in the discharge from the urethra and conjunctiva in five cases of Reiter's disease. Apart from this all efforts to discover an infecting agent have failed, although the hypothesis of virus causation is the most popular. Reiter's spirillum has not been seen since 1916. One thing seems certain—this is no venereal disease, and bears no relation to gonorrhoea or syphilis. There is no reason to believe that it is caused by gonococci "lurking in the background," as has been mooted.

The inflammatory triad of symptoms may occur in *gonococcal infection,* but here there will be a history of venal contact, and of urethritis well preceding the other symptoms. Pus from all sources will contain gonococci (except that the conjunctivitis may be catarrhal, metastatic, and non-infective), the fixation test will usually be positive, the course and response to treatment different. *Secondary syphilis* might be confused on account of the fever, rash, and kerato-conjunctivitis. Penile erosions also occur in both diseases, but differ in their appearance, time relation to other symptoms, and bacteriology. Syphilis could not account for the urethritis. *Rheumatic fever* may be simulated if flitting polyarthritis is the presenting symptom, together with fever and night sweats. Reiter's disease does not respond to salicylates.

Treatment

Miller and McIntyre consider that putting the patient to bed for six weeks to three months is all that can be done. They found penicillin and sulphonamides to have no effect on their two cases. Protein shock therapy has been used in Germany, apparently with some success, especially by Beiglboeck (1943). Sulphadiazine, however, seemed to have a good effect in the cases noted below.

Case Reports

Two patients with Reiter's disease were seen in the Bahamas last year—one a British airman and the other a coloured Bahaman. Though they presented within a fortnight of each other there was no history of close contact between them to render likely the transfer of infection. Their stories were briefly as follows.

Case I

A Scottish leading aircraftman aged 30, employed as a batman for 4½ years, complained on April 5, 1945, of pain in and limping on the left foot. This had been coming on in the mornings for about three weeks, and had got worse. The previous January he had been in the R.A.F. hospital with a painful swollen left knee, which settled down completely after it had been opened and the pus had been evacuated. This pus was apparently sterile. The patient (who was a very reliable and honest person) denied intercourse since leaving England. There was no history of trauma.

On examination the patient was rather flushed and feverish. His skin was bathed in sweat and his temperature was 101° F. (38.3° C.). The body of the left foot was red, hot, and swollen, with thickening and some oedema of the tarsal periarticular tissues. The ankle was less affected, but showed some painful limitation of flexion and extension. There was also a moderate bilateral catarrhal conjunctivitis with episcleritis, of three days' duration according to the patient. There were no other noteworthy signs in any system. By next morning the right knee had become very swollen, warm, and tender, and there was a large synovial effusion. A little serous, slightly purulent fluid was aspirated for examination. No organisms were found in it, and it remained sterile on attempted culture. A full blood count was normal, white blood cells numbering 6,000, with 60% polymorphs. On the 14th the conjunctivitis, which had subsided fairly rapidly, flared up again, this time with rather more muco-purulent discharge. This subsided within a week. On the 18th a yellowish profuse purulent urethral discharge started, and within twenty-four hours two small erosions had appeared on the glans penis. No organisms could be found in the discharge, and rectal examination showed nothing abnormal. The two-glass urine test, with threads and debris in the first glass, suggested an anterior urethritis. No facilities were available for performing the gonococcal fixation test, but the Kahn test was negative. There had been little or no change in the affected joints, and there were fleeting pains in other joints, including those of the upper limbs.

On the 20th a course of sulphathiazole was started—8 g. the first day and 6 g. on succeeding days. The drug was stopped after a total of 32 g. had been given. The fever, which had remained low and intermittent, with peaks of 100–101° F. (37.8–38.3° C.), since admission, stopped on the fourth day of the course, and stayed down. The urethral discharge also subsided and did not recur. Flitting joint pains remained. Tender purple raised irregular areas appeared on the palm of the right hand but disappeared within a few days.

By May 23 a gradual subsidence of joint pains and swelling had occurred. The most bothersome joint was now the right ankle, which remained somewhat swollen and painful, causing a limp. The patient was discharged on June 6. The ankle continued to give him a little trouble for some weeks, but gradually got better.

Case II

On April 19, 1945, a coloured Bahaman aircrafthand aged 20 complained of a pain in the left chest and left shoulder while carrying his meal to his table at lunch-time. After this he felt sleepy and unwell, and experienced some pain on inspiration. There were no other complaints. He denied sexual intercourse since January. The previous year he had been in the civilian hospital with a urethral discharge, but its nature was not known.

On examination he was found to have a temperature of 102° F. (38.9° C.), with a pulse of 106. His left lower intercostals were tender to digital pressure. He had a profuse purulent urethral discharge, but was vague as to its duration, though quite definite that it was very recent. Further examination, including a rectal one, revealed nothing significant. A blood count and a skiagram of the chest were both normal. The discharge showed pus and epithelial cells, but repeated examination failed to reveal gonococci. By the 23rd the pains in the chest had gone, but the patient was experiencing fairly severe flitting polyarthralgia. The affected joints would become painful, tender to touch, and warm, with restricted movement, but there was no inflammatory localization. He was given a course of sulphathiazole—26 g. in four days.

On the 25th a bilateral catarrhal conjunctivitis started. This was never severe and cleared up within a few days. By the 28th the urethral discharge was over, and the low irregular fever, present since admission, had stopped. He was discharged on May 1, and I have not heard of any recurrence.

It is realized that this case is not so definite as the first. It might be objected that the conjunctivitis was a manifestation of sulphathiazole sensitivity, but this is unlikely to occur before the fifth day (M.R.C. War Memo. No. 10, 1945). Chronic gonorrhoea is improbable without evidence of genito-urinary involvement deeper than the urethra, and would not be expected to clear so rapidly simply on chemotherapy, especially as the patient's urethritis had been treated with sulphonamides the previous year. Considered together, the febrile polyarthralgia, purulent abacterial urethritis, and conjunctivitis make Reiter's disease a highly probable diagnosis.

There was another coloured Service man the diagnosis of whose illness had been in doubt, but who, in retrospect, showed some features suggestive of Reiter's disease, though without a urethritis having been discovered.

Case III

A lance-corporal cook aged 29 was admitted to hospital on March 21, 1945, for pain in the left lower limb. A year earlier he had fallen and twisted the left ankle and foot, since when he had had intermittent aching in the region of the first metatarso-phalangeal joint, spreading up the leg as far as, and into, the knee. More recently he had been almost unable to walk, and had been off duty for 18 days. There were no other complaints and no history of venereal disease.

On examination there was found to be loss of muscle power, without evident wasting, in all parts of the left leg. There was painful restriction of movement at the left knee- and hip-joints, but inflammatory signs were absent. As in the other cases, a low irregular fever, with peaks of 101 and 102° F. (38.3 and 38.9° C.), was present, and remained for nearly three weeks. There were no other noteworthy physical signs. Skiagrams of the limb were normal, and the surgeon reported that the disability was not an orthopaedic one. On the 24th the patient complained of pains in the eyes, lacrimation, headache, and photophobia. He had an acute sero-purulent conjunctivitis with episcleritis, but the deeper structures were normal. Two days later an itching papular eruption had appeared on the chest, also involving the penis, and to a lesser extent the abdomen. Benzyl benzoate, applied as a therapeutic test, was ineffective. No organisms were found in the ocular discharge; nor could they be at any time. The blood count was normal and the Kahn test negative.

The pains in the leg had almost cleared by the 28th, but some fleeting pains were now being felt in the shoulders. The rash had

spread to involve the whole body except the face, and included the hands and feet. It was only mildly irritating. The individual lesions were small, round, regular, uniform maculo-papules. They involved the extensor surfaces more than the flexor. Two of the papules on the shaft of the penis had broken down and ulcerated; examination of these was negative for treponemata and other organisms. Centrifugal scaling of the individual spots started next day, reminiscent of pityriasis rosea.

On the 30th the eyes felt better, but the sight was "dim." The conjunctivitis had largely subsided, but there was a bilateral circumcorneal injection with clouding of both corneae, which presented a superficial punctate keratitis. This was treated with atropine drops and a potassium iodide mixture, and there was a slow improvement. By April 30 the eyes were quite clear, and the rash nearly so. The patient was discharged. Unfortunately his eyes relapsed a little over a month later and the rash recurred, though in lesser degree. This time the eyes did not improve so quickly, though partial intermittent remissions occurred. When last seen, in August, keratitis was still present

Conclusion

It is at least possible that Reiter's disease may occur without one of the three "essential" inflammatory symptoms, but until the causal agent is discovered this is likely to remain a speculation. Incidentally, two of Harkness's six cases of Reiter's disease with keratodermia blennorrhagica failed to show any ocular manifestations. One might, indeed, go further and suggest that perhaps a single symptom may, at times, represent an incomplete form of the whole disease, so bringing forth a possible relationship between Reiter's disease, "non-specific urethritis," kerato-conjunctivitis of unknown aetiology, and "palindromic rheumatism."

The main importance of an awareness of the syndrome lies in its distinction from chronic gonorrhoea, thereby altering the prognosis and avoiding hectic treatment and the venereal stigma. It is probable that Reiter's disease occurs much more commonly than is recognized, but it is considered that the symptom-complex described above is pathognomonic and should usually be unmistakable.

I should like to express my thanks to Prof. Findlay and Prof. Witts for their help in preparing this paper.

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Medical Memoranda

Reiter's Disease

In 1916 Reiter described a triad of symptoms characterized by conjunctivitis, urethritis, and arthritis; but very little seems to have been written about it in this country. Colby (1944) said that "Since the initial symptoms of Reiter's disease are frequently related to the urinary tract, the urologist is most apt to see these patients." The intention of his communication was to bring the characteristic triad of symptoms to more general notice. Rosenblum (1945) remarked on the paucity of the literature and the general lack of awareness of the condition. Quite recently Gersh and Reich (1945) described a case of Reiter's disease in a white soldier aged 19. He had conjunctivitis, arthritis, and urethritis.

Such literature as is available stresses the fact that this syndrome, consisting of conjunctivitis, urethritis, and arthritis, may, naturally enough, be mistaken for gonorrhoea or some other condition. In some cases the original diagnoses were rheumatic fever, gout, acute conjunctivitis, prostatitis, acute arthritis, and non-specific urethritis. Because of the lack of information in this country, I think it worth while briefly to describe a case of so-called Reiter's disease which came under my care.

CASE REPORT

The patient was a male German P.O.W., aged 21, admitted with a provisional diagnosis of gonococcal infection not yet diagnosed. Investigations had yielded negative results and he had had sulphonamide therapy. The history stated that the illness started with a cold three weeks before, followed immediately by balanitis, urethritis, conjunctivitis, and painful swelling of the right knee-joint, some slight loss of weight, frequency of micturition, and a fluctuating temperature. He said that both knees were very painful and that he had had other joint pains; the frequency had settled. In other respects his statement agreed with the written history. He admitted intercourse on a few occasions several months before the illness began.

Examination showed marked bilateral conjunctivitis; both knees were hot, swollen, and tender; he had an abscess on the right calf, boils on the left calf, and a discharging right ear. There was a mild pyrexia. Further examination showed definite keratitis in the right eye, but no perforation of the right ear—external otitis only.

The gonococcal complement-fixation test showed unsatisfactory fixation of complement in absence of antigen. A urethral swab revealed many pus cells, but only a few diphtheroid bacilli were present. No gonococci were seen. A swab from the eyes produced very few diphtheroid bacilli, a few pus cells, but no gonococci. A swab taken after prostatic massage revealed a very large number of mixed organisms, chiefly staphylococci and Gram-negative bacilli, but no gonococci. A full blood count showed: red cells, 4,750,000; haemoglobin, 78%; colour index, 0.82; leucocytes, 11,550. The urine was alkaline with a slight trace of albumin but no sugar. The deposit showed very few pus cells, very few epithelial cells, many triple phosphates, but no casts or organisms.

A German medical officer, also a P.O.W., to whom I mentioned the case, said that it was very common on the Eastern front. It was believed by them to be a virus disease and was usually treated with amidopyrine.

This patient was treated with mist. sod. sal. N.W.F., 1 oz. (28 ml.) 4-hourly; atropine in castor oil, and then penicillin drops, to the eyes. The abscess was incised and drained. Dettol baths were given for the balanitis. The urethral discharge ceased about two days after admittance; the arthritis and balanitis cleared in a few weeks, skin extension having to be applied to the right leg. The eyes were very resistant to treatment and he had numerous relapses. When the right eye was almost clear he had diffuse keratitis of the left eye.

The patient was finally discharged from hospital just over four months after admittance and five months from the first appearance of the symptoms.

My thanks are due to Dr. A. R. Grant, medical superintendent, for permission to publish this case.

F. WRIGLEY, M.R.C.S., L.R.C.P.,
late E.M.S., Whittingham Hospital.

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Elongated Styloid Process encountered during Tonsillectomy

In the course of some 450 tonsillectomies performed under local analgesia in adults this is the first case of noticeable elongation of the styloid process I have encountered. It may therefore be considered interesting enough to merit recording.

CASE REPORT

On April 5, 1946, during induction of local analgesia for the removal of small septic tonsils in a woman of 44, the point of the needle encountered a bony prominence at the level of the lower pole of each tonsil. Dissection of the tonsils presented no exceptional difficulty; the plane of cleavage between the capsule of the tonsil and the pharyngeal aponeurosis had to be very strictly adhered to. After removal of the tonsils a pointed and bony-hard prominence could be seen in the lower third of the tonsillar fossa on each side. This prominence was produced by the tip of the elongated styloid process bulging downwards, forwards, and inwards the lateral wall of the tonsillar fossa formed by the superior constrictor muscle of the pharynx, lined on its inner surface by the glistening pharyngeal aponeurosis. Recovery was uneventful.

COMMENT

This moderate bilateral elongation was symptomless, unlike the more pronounced unilateral elongation, of which a case was reported by A. J. d'Abreu (1945), and which was accompanied by discomfort in the neck and throat and displacement of the tonsil.

Elongation of the styloid process is explained by the following morphological facts. The styloid process of the temporal bone, the stylo-hyoid ligament, and the lesser cornu of the hyoid bone represent the stylo-hyal, epihyal, and cerato-hyal portions, respectively, of the bar of the second visceral arch. The stylo-hyoid ligament, which is attached to the tip of the styloid process and to the lesser cornu of the hyoid bone, is the morphological continuity of the styloid process, and may undergo partial ossification.

Mauritius. ARTHUR DE CHAZAL, M.S., F.R.C.S.

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Reviews

NEW YORK ADVANCING

New York Advancing. Seven More Years of Progressive Administration in the City of New York, 1939–45. By F. H. LaGuardia. Edited by Rebecca B. Rankin. (Pp. 393; illustrated. $1.00.) Copies available from Municipal Reference Library, 2230 Municipal Building, New York 7.

This handsome and copiously illustrated book is a great tribute to the enterprise of New York City and to the stimulus which Mayor LaGuardia has applied to it during his years of office. We can only single out of the record a few of the city's achievements in the prevention and treatment of disease. Housing is apparently almost as great a problem in New York as it is in London, but during the last ten years the city has housed over 17,000 families of low incomes and proposes shortly to house 18,000 more. Fifty thousand slum buildings have been cleared away. The city's lowest death rate was 9.9 per 1,000 in 1941; it rose to 10.3 in 1944. The best record for infant mortality was when in 1942 there were 28.8 deaths in 1,000 live births: in 1944 it was 31.2, but it is to be noted that the average for the first ten years of the century was 119.9. The record with regard to diphtheria is very striking; thanks to a vigorous and sustained immunization campaign the deaths have dropped from an average of 1,290 a year to 7 in 1944. There is favourable mention of gamma globulin used for the prevention or modification of measles. In a group of 1,000 children exposed to measles, 80% did not develop the disease, while the rest had a very mild attack. The tuberculosis death rate has dropped to 46 per 100,000 of the population. Every quart of milk sold in the city must meet rigid standards of quality and undergo thorough pasteurization. The claim is justifiably made that the city "has one of the most perfect milk supplies in the world."

Hospital building and reconstruction have been partly held up during the war by lack of labour and materials, but the city is now proceeding with a forty-million-dollar programme. Much concern is shown at the alarming decrease of nurses available for city service. Before the war it had 62,000; in 1945 the number was less than 3,000. There is very close touch between the municipal hospitals and the medical schools in the city which has proved fruitful in many directions. An important new development is a forensic institute which will house all the activities of the department of the chief medical examiner, whose function it is to inquire into all doubtful deaths. It will be affiliated to the New York University College of Medicine and will be the centre for undergraduate and postgraduate training in legal medicine. Another novelty is the Bureau of Alcoholic Therapy, instituted by Mayor LaGuardia in 1943 to combat chronic alcoholism. The Bureau "takes the view that the chronic alcoholic is a sick person, his affliction being tantamount to a mental illness. The emphasis of the whole programme is (1) readjustment of the underlying personality defects which results in a perception of values hitherto distorted; and (2) total abstinence, on the assumption that the alcoholic cannot drink in a controlled manner." The therapists employed are themselves ex-alcoholics. The particulars given about the 175 men who have been treated are encouraging. There is no shrinking modesty about the claims made in this record, but the New Yorker may well be proud of it.

PUBLIC KNOWLEDGE

The State of Public Knowledge. By K. E. Barlow. Faber & Faber. 8s. 6d.

Dr. K. E. Barlow's little book suffers from two disadvantages: the first is that its paper and printing have a wartime austerity; the second (common to all philosophical essays) that, unless an author invents words, he is obliged to use common words in an uncommon way. "Integration," the author's favourite word, is an instance. Modern writers overwork it; sometimes it means co-ordination, sometimes harmony, sometimes the absorption of the part by the whole. St. Augustine expressed the stages of human psychology, the transition from the sensuous to ultimate harmony with the infinite, by the words: "De corpore, per corpus, circa corpus, ad se ipsam, in se ipsa, ad Deum, apud Deum." In modern usage this is a succession of "integrations."

A reader might do well to begin with Dr. Barlow's last two chapters; they will encourage him to read the whole book. His insistence on the conceptual nature of scientific knowledge will remind older readers of *The Grammar of Science* which thrilled so many of them forty or fifty years ago. That is not a criticism of Dr. Barlow; it is well that fundamental truths should be restated in the idiom of each generation. Fragments of the idols of the market-place (and of the study) which Karl Pearson smashed fifty years ago have been swept away, but others are worshipped in their room.

To a medical reader, Dr. Barlow's insistence on psychological pattern will be welcome. He takes the example of the intricate pattern of behaviour that such an insect as the hunting wasp *Bembex* follows and must follow. He notes that conscious man may modify his behaviour when the situation changes, but only within limits.

"Carlyle has said in his vivid way," wrote Bagehot 90 years ago, "'Two or three young gentlemen have said, Go to, I will *make* a religion.' This is the exact opposite of what the irregular, enjoying man can think or conceive. What! is he, with his untrained mind and his changeful heart and his ruleless practice, to create a creed? Is the gushing life to be asked to construct a cistern? Is the varying heart to be its own master, the evil practice its own guide? Sooner will a ship invent its own rudder, devise its own pilot, than the eager being will find out the doctrine which is to restrain him. The very intellect is a type of the confusion of the soul. It has little arguments on a thousand subjects, hearsay sayings, original flashes, small and bright, struck from the heedless mind by the strong impact of the world. And it has nothing else. It has no systematic knowledge; it has a hatred of attention."

For the "irregular, enjoying man" we may read "every man," for the "two or three young gentlemen" a few powerful men who have shed the blood of thousands, and we have the situation of 1914–18 and of 1939–?. That is Dr. Barlow's case strengthened by evidence not available to Bagehot. It merits our serious attention.

OBSTETRICS AND GYNAECOLOGY

The 1945 *Yearbook of Obstetrics and Gynecology.* Edited by J. P. Greenhill, M.D., F.A.C.S. (Pp. 576; illustrated. $3.00 or 18s.) Chicago: The Year Book Publishers; London: H. K. Lewis and Co.

Lest years of war service in distant parts of the earth have been responsible for ignorance which would be otherwise culpable, it is well to remind readers that the *Yearbook of Obstetrics and Gynecology* presents a remarkable summary of the published literature and should be on the desk of every general practitioner and of every doctor specializing in this branch of medicine. The 1945 edition follows the customary plan of being devoted almost equally to obstetrics and gynaecology. The papers to which reference is made are grouped conveniently in sections dealing with pregnancy, labour, puerperium, the new-born, gynaecological diagnosis, operative technique, etc., and there is an excellent double index of contents and authors.

It is interesting from year to year to see how attention is focused on different aspects of the subject in clinics the world over. Some of the published work is original, much of it consists of those reviews of results with the lessons to be learned which are so valuable in assessing the true merit of various methods of treatment. Considerable space is given this year to the subject of ante-partum and post-partum haemorrhage, with particular reference to placenta praevia. An excellent editorial summary helps to guide the inexperienced through the maze of conflicting opinions to the basic fundamental truths. In the gynaecological section vaginal hysterectomy receives some emphasis, and the relevant papers give ample indication that this operation should be more widely adopted. It is distressing to note that the "operative urge" in some clinics is such that the editor, in commenting on their published work, has felt the need to condemn in outspoken terms the tendency to perform hysterectomy for no reason, and Caesarean section with an alarming death rate for conditions such as eclampsia. It is interesting and encouraging to note the dissatisfaction expressed with the results of treatment of cervical carcinoma, for this dissatisfaction is leading to a search for better methods. At least one important American clinic is returning to radical surgery in selected cases as a possible means of improving results.

The *Year Book* is an excellent institution in that it allows the busy practitioner to keep in touch with world thought in obstetrics and gynaecology. Dr. Greenhill is to be congratulated on the 1945 edition.

PSYCHOSOMATIC MEDICINE

Emotions and Bodily Changes. A Survey of Literature on Psychosomatic Interrelationships. 1910–1945. By Flanders Dunbar, M.D., Sc.D., Ph.D. Third Edition. With Supplementary Introductions and Additional Bibliography. (Pp. 604. $7.50 or 50s.) New York: Columbia University Press; London: Oxford University Press.

The appearance of a third edition of Dr. Dunbar's survey of the literature of psychosomatic medicine bringing it up to 1945 is very welcome. In it we can find a mine of useful information culled from the opinions of many leaders of medicine both in America and other countries. It is well selected and arranged, so that there is every opportunity for those who wish to undertake research, which is so very necessary in this field, to get plenty of ideas and those who are perplexed by clinical problems will find authoritative opinions. An extensive bibliography at the end will point the way to further study. It is perhaps indicative of the youth of this branch of medicine that out of 432 pages of text only 11 are occupied by the section on therapeutic considerations.

The main point of this study is that, if medicine as a whole is to be progressive and really promote health and efficiency, the removal of symptoms of disease must no longer be the goal of the physician and surgeon: the patient must be regarded as a whole and his total reaction to the environment must be kept efficient, or if impaired must be repaired. As is very well stressed, the complaint of the doctor going into the Services that he gets no practice in medicine is a reflection on our medical education. What could be better medicine than keeping 1,000 men fit for service in the field and maintaining their morale so that they are ready to face the most violent and disturbing changes in the environment?

In addition to the necessity for further investigation into means of preventing such already well-recognized psychosomatic conditions as peptic ulcer, asthma, hyperpyesis, and the like the author points out that this field covers such conditions as accident-proneness, liability to colds, and tendency to abortion, etc. In relation to accidents he quotes figures which show that by shifting 5% of drivers with the highest accident records to other jobs the accident rate fell by 80%. Nevertheless this 5 percentage of the employees who were moved to different jobs continued their high accident record, no longer through driving cars, but through slipping, falling, shutting fingers in doors, or in other ways, either at home or in going to and from work. Here there is obviously room for intensive personality studies to the great benefit not only of the individual but also of the community as a whole.

In more difficult cases it would seem that deep analysis is necessary for cure of psychosomatic disease, but in the earlier stages a good deal can be done by the much easier method of suggestion. Unfortunately, as the author points out, the conscious use of suggestion as generally understood by physicians is considered both dishonest and unscientific, being discussed usually in connexion with cults. The "scientific way" is to tell the patient "to buck up," "that there is nothing the matter except his imagination," that he seems to have "one of these troubles we do not yet understand." Clearly it is very necessary to get rid of prejudices and make a concerted effort to prevent and treat these conditions, having regard to the personality of the patient as a whole rather than to the symptoms of which he complains.

Notes on Books

Hereditary Hypochromic Anemia by I. LUNDHOLM was reviewed in an editorial in these columns in 1941, as it was first published as Supplement C II to the *Acta Medica Scandinavica* in 1939. It is now available in the form of a monograph (Uppsala: Boktryckeriaktiebolag; no price given). Its contents are described in the subtitle as a clinical-statistical study, and it provides an extremely useful analysis of the frequency of different signs and symptoms in idiopathic hypochromic anaemia. Lundholm's purpose is to emphasize the importance of constitutional factors in the aetiology, but he has gone too far in renaming the condition hereditary hypochromic anaemia; as well speak of peptic ulcer as hereditary ulceration of the stomach.

Those who saw the recent March of Time film called "Life with Baby" will be glad to possess *How Baby Grows* (Hamish Hamilton Medical Books; 10s. 6d.), a pictorial record of child development during the first five years of life, with a skilful commentary by Dr. ARNOLD GESELL. The natural appearances of the babies and children is most convincing, and parents should find the book a valuable record against which to check the achievement of their own children. It is emphasized that the children chosen represent average trends and that every baby is an individual with his own way of growing up. All workers with children, medical and lay, will find something of value in this excellently produced volume, which attains the usual high standard of publication from Yale and the famous Gesell clinic.

Preparations and Appliances

PENICILLIN OINTMENT FOR OUT-PATIENTS

Dr. I. LLOYD JOHNSTONE, M.C., D.O.Oxon, honorary surgeon, Worcester Eye Hospital, honorary ophthalmic surgeon, Guest Hospital, Dudley, writes:

To overcome the difficulties of dispensing penicillin in the form of an eye ointment for use at home some sort of small container which would not easily become contaminated by non-sensitive organisms and would not affect the potency of the penicillin was required. During the war small porcelain ointment pots were not available, and they are not free from the objection of possible contamination when the lid is removed and a particle of ointment taken for each treatment. The price of such pots would probably be prohibitive.

Penicillin is destroyed by most metallic substances, so that the use of collapsible lead tubes appears to be questionable. There are other well-known collapsible tubes for oculenta and recourse has been made to one of these, namely a glycogelatine capsule of roughly one gramme capacity in regular use by Philip Harris, Ltd., of Birmingham, for dispensing eye ointments. These capsules of penicillin ointment have been in use experimentally since March, 1945, and are proving useful within limitations for the purpose for which they were intended.

Three different bases have been tried. The first contained 30% of lanette wax SX, but this irritates some skins. Next anhydrous eucerin was tried, but this had the same objection. This difficulty might be overcome if the *p*H of the sterilized base were carefully adjusted, but we next turned to a vaseline, lanolin, and liquid paraffin base (30% of each) with distilled water making up the remainder. This does not irritate the skin, but it is quite possible further improvements can be made. Possibly the lanolin could be reduced or omitted with advantage. Finality for the base is not claimed. Strength of penicillin used has been 250 O/u per gramme at first, 500 O/u latterly. The only penicillin used was sodium penicillin made by Glaxo Laboratories. The new British Pharmacopoeia ointment, with only 10% of lanolin and no water, contains 1,000 units of the calcium salt per gramme.

Tests for potency have been carried out week by week with the same capsule of ointment kept in a dwelling house at room temperature. A very small patch of ointment inhibited growth in all directions to a distance of 0.5 to 1 cm. No marked drop in its power of inhibition on the standard staphylococcus aureus was found till the seventh week, when inhibition ceased abruptly following a "heat wave." A further test is about to commence to compare the new British Pharmacopoeia base containing no water with the above base containing 10% of water.

Clinical results are satisfactory so far as the last ointment base is concerned. It is free from undesirable irritation of the skin. The therapeutic effect in blepharitis is variable. Some cases respond well, others not at all. In many cases cultures of the organisms have been grown and sensitivity to penicillin tested, but the quickest and best test is to try either penicillin or thiazamide ointment and change over if the response is not satisfactory. More cases of blepharitis, including styes as well as the chronic scaly and pustular forms of blepharitis, are clinically cured by thiazamide than by penicillin ointment at present.

The Penicillin Clinical Trials Committee of the Medical Research Council has provided the penicillin for this and other clinical research carried on concurrently. Messrs. Philip Harris, Ltd., have very kindly given the full benefit of their experience in making eye ointments and capsules, and have made, supplied, and filled the capsules without charge and on the understanding that they have no restrictive rights to information obtained. Dr. McMenemey and his staff in the Pathology Department of the Worcester Royal Infirmary have carried out the many tests with real interest and enthusiasm. To all these my sincere thanks are tendered.

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FOOD CONSUMPTION IN AUSTRALIA

Experience with rationing in this country has so far justified the old-fashioned advice that it is wise to leave the table still feeling slightly hungry. There is no evidence that anyone is physically the worse for shortage of food, and Magee[1] contends that our children, with their special allowances of "protective" foods, are actually better nourished than before the war. Mental preoccupation with food, both our own and that of other people, has, however, become a sign of the times. While hinting gloomily at the direction from which the next cut in our rations is to be expected, some sections of the popular press seek also to incite our envy. Glowing accounts are given of the supposed state of plenty prevailing in more fortunate countries. Thus beefsteak and strong drink abound in Eire, dairy products in Denmark, and asparagus and other choice foods in Northern Italy. Even battered Germany is said to be laughing at us behind our back, cynically contrasting our willingness to endure further sacrifices on her behalf with the thriving state of her own black market. Some of these dreams of rich living may be true, others may not. But in any case the availability of good food for those with money enough to buy it does not necessarily give a true indication of the nutritional status of a whole country. The rich may grow fat while the poor are starving.

In the midst of so much uncertainty it is a pleasure to turn to two official reports, recently issued from Canberra, in which authentic data on food consumption in the Commonwealth are tabulated and compared with similar data for this country and elsewhere. The first report,[2] issued in 1945 by the Australian Institute of Anatomy, described dietary surveys carried out by that body under the direction of the Nutrition Committee of the National Health and Medical Research Council, Australia. Col. F. G. Goucher was in charge of a team of 15 field officers, who were all women science graduates. About 25 other women were engaged in the compilation of data under Mrs. Isley Gottlieb, and Dr. F. W. Clements was chairman of an Advisory Food Survey Planning Committee. The survey took place during 1944, and in all 2,730 households, comprising 15,235 persons, were investigated. As the survey was limited to households containing 2 or more children, the proportion of children to adults in the groups examined was higher than in the general population. Information on food consumption was obtained through the co-operation of the housewife by means of the log-book or dietary budget method. Data collected from these records were then submitted to statistical treatment, and figures were converted in various ways to give the mean daily intakes for the many kinds of foodstuffs used and for specific nutrients such as calories, carbohydrates, proteins, fats, minerals, and vitamins. The final values were expressed both for the "adult male unit" and *per capita*, and were compared with the allowances recommended by the National Research Council of America. It was fully realized, however, that failure to reach these high standards cannot in itself be taken as evidence of deficiency.

So far as average intakes are concerned the results of the survey indicate that, with the main exception of calcium, Australians during 1944 obtained supplies of foodstuffs and nutrients sufficient to ensure a satisfactory diet. In many instances higher levels of food intake were found than had applied before the war. Thus more fruit and vegetables were consumed, more milk and dairy produce, and, in spite of rationing, more meat and meat products. Equally satisfactory conclusions, however, were not reached in regard to all sections of the population. The vitamin A intake varied considerably according to the amount of vegetables grown in different zones. In 43% of households the intake was less than 70% of the N.R.C. standard allowance, this level being taken as a "restricted" standard in view of the liberality of the original estimate. In 46% of households the vitamin B_1 intake was below the recommended level, and particularly low levels were found in country districts of Western Australia. As in this country, family food intakes were found to increase with income and to decrease with the size of the family.

The second report,[3] published in 1945–6 by the Parliament of the Commonwealth of Australia, compares food consumption levels in Australia with those in the United Kingdom. Four Australian representatives, headed by Dr. Clements, arrived in London in September, 1944, and went into consultation with representatives of the Ministry of Food, led by Sir J. C. Drummond. The comparison was made by dividing the supplies of food "moving into civilian consumption" by the sizes of the populations to be fed from these supplies. The committee does not therefore appear to have had access to the results of the 1944 Australian survey. From an account of the statistical methods employed, which runs to 105 paragraphs, the extraordinary difficulty of arriving at strictly comparable estimates of food intakes can be realized. To give only one example, it was necessary to find conversion factors for many foods to relate actual weights to "common denominators." Thus meat was related to carcass weight by a factor which was 1.25 for boned beef, 2.5 for canned corned beef, and 1.35 for other canned meats. Fish had to be treated differently, according to whether it was filleted or whole. Great pains were taken to prevent anomalies arising through the use of different statistical methods in the British and Australian estimates.

The joint committee concluded that during 1944 food supplies were adequate to supply at least the "restricted" N.R.C. standards for all nutrients in both countries, again with the sole exception that the calcium intake was low in Australia. The estimated supplies of some nutrients—including calcium, iron, riboflavin, aneurin, and ascorbic

[1] Magee, H. E., *British Medical Journal*, 1946, **1**, 475.

[2] *The Food Consumption and Dietary Levels in 2,730 Australian Family Households in 1944*, issued by the Australian Institute of Anatomy, Canberra, 1945, as Special Report Series No. 1.

[3] *Food Consumption Levels in Australia and the United Kingdom*, published in 1945–6 for the Government of the Commonwealth of Australia by L. F. Johnston, Canberra, as No. 41, Group 1, F 33, price 3s.

acid—were greater in Britain than in Australia, while the situation was reversed for animal protein, vitamin A, and nicotinic acid. It was clearly stated, however, that the Australian diet was more varied and palatable because of the inclusion of more meat, sugar, shell eggs, and fruit.

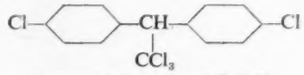
Australia's pre-eminence as a meat-eating nation may be judged from the average intake of 212.6 lb. carcass weight per head per annum during 1944, which may be compared with 157.7 lb. for Canada, 155.4 lb. for the U.S.A., and 115.0 lb. for Britain. In contrast Britain led in potato consumption, eating 282.2 lb. per head, as against 190.3 lb. for Canada, 145.1 lb. for the U.S.A., and only 117 lb. for Australia. The Australian's dinner plate, therefore, may be roughly pictured as holding twice as much meat and half as many potatoes as our own. Fish supplies are better in Britain than in Australia, but this advantage must be balanced against inferior supplies of poultry and rabbits.

It is obvious, therefore, that we have good cause to envy not only Australia but also Canada and the U.S.A. for the richness and variety of their diets. We in our turn may be envied by our even less fortunate allies. We must not forget, for example, that until recently inhabitants of Holland poisoned themselves by eating beech nuts, and even tore up their floor boards to make fires for boiling sugar beets. Possibly we should rejoice that we are still far removed from the threat of actual starvation. This source of comfort, however, will do little to allay the growing resentment among our housewives. Often they are tired to the point of neurosis by the intricacies of rationing, by weary waiting in queues, and by the continual strain of planning improvised meals. The slight increase in our meat ration will be welcomed as a small step in the direction of Australian standards of diet, but the voice of the British housewife deserves to be heard much more loudly among those responsible for planning international food policy.

D.D.T. IN GENERAL USE

During the war D.D.T. helped to control the insect vectors of such diseases as typhus, malaria, and dysentery. There was no need to emphasize the importance of this work, and the D.D.T. was properly applied with attendant success. Now D.D.T. is on sale to the public, and it will be used against a wider variety of insect pests and nuisances, but there may be failures and disappointments in store. For example, it is often thought that a few puffs of D.D.T. powder in the wardrobe will protect clothing from moths. But since D.D.T. has no action at a distance and no repellent effect, there is nothing to prevent moth grubs living safely under the lapel of a coat the top of which is covered with D.D.T. dust. A summary of the properties and methods of application of D.D.T. has been prepared by the Ministry of Supply.[1] It should be useful to everyone concerned with insect control.

Pure D.D.T. is a colourless crystalline solid (melting-point 108.5–109° C.), with a low vapour pressure (about 1.3×10^{-7} mm. Hg at 20° C.). It is chemically stable under most normal conditions, so that traces of the substance are very persistent. It is sparingly soluble in water—less than 0.2 parts per million—but soluble in varying degrees in organic solvents. It is least soluble in hydroxylic and polar solvents and most soluble in aromatic and chlorinated solvents. D.D.T. is lethal to a wide range of insects and other arthropods, but the lethal dose varies very considerably from one to another. The dose which will kill a mosquito or a fly is much less than that necessary to kill a flea or a louse, which again are more susceptible than bugs and cockroaches. To be effective the D.D.T., either dry or in solution, must come into direct contact with the cuticle. It is then absorbed and will poison the insect, but the effect is slow and may take from a few minutes to a few days, according to the size of the dose and the resistance of the insect.



Structural formula of D.D.T.

The most valuable property of D.D.T. is its persistence. Surfaces contaminated with it will poison insects which walk over them for many weeks after the original application. To bring D.D.T. into contact with harmful insects it is usually necessary to spread a small quantity of the insecticide over a relatively large area of clothing, walls, vegetation, or water. To achieve this the D.D.T. is diluted with a solid in the form of a powder or with a liquid to form a solution, emulsion, or suspension. It is possible to purchase commercial grade D.D.T. (about 70–80% pure) and make up a suitable preparation from it; but in most cases it is more satisfactory to obtain the finished product from a reputable firm. Such products should give the percentage of D.D.T. on the label.

In the form of a powder, diluted to 5 or 10% with any suitable inert mineral, D.D.T. can be applied against body vermin, such as lice and fleas, against pests of domestic animals, and against crickets, cockroaches, etc. The powder can be dispersed simply by shaking or by means of a "dusting gun." The most commonly used solvent vehicle is kerosene. A solution of 3–5% in this liquid produces a residual toxic film on walls and ceilings to combat such insects as bed-bugs and houseflies. A relatively coarse spray is most successful, since it is necessary to wet the wall; fine atomizing guns create mists which tend to float away. Emulsions and suspensions of D.D.T. in water will also form a residual film. Such preparations have been employed for the control of mosquito larvae and against head lice. It has been shown that D.D.T. can be incorporated in paint or distemper and retain some of its insecticidal power. Its toxicity to insects in this form, however, is much less than that of a superficial deposit, presumably because much of the D.D.T. is buried in the paint. Against flying insects it can be used in the form of a fine mist (aerosol) or a smoke. But these methods do not produce the lasting residual film which is the principal merit of D.D.T.

We have previously[2,3] reviewed the literature on the toxicity of D.D.T. to man and other mammals. Further results have appeared since then, but they have not substantially altered our conclusions. In insecticidal concen-

[1] *Some Properties and Applications of D.D.T.* H.M.S.O., 1946. 6d. net.

[2] *British Medical Journal*, 1945, **1**, 338.
[3] Ibid., 1945, **2**, 260.

trations D.D.T. is practically harmless to man and domestic animals. The most likely dangers from careless use will probably follow accidental or intentional (suicidal) drinking of concentrated preparations, among which may be included the 5% solution in kerosene. There may also be some risk involved in repeated contamination of the skin by oily solutions. These hazards must be considered by pest-control operators, who will regularly handle concentrated D.D.T., but the general public will hardly be concerned with preparations of this type.

The earlier development of D.D.T. was to combat disease vectors and aid military hygiene. In the wider field of plant protection control operations are complicated by the danger of destroying beneficial insects, principally the parasites and predators which naturally keep pests in check. However, this risk has perhaps been overemphasized, since D.D.T. will only do more efficiently what other insecticides have done in the past. The agricultural entomologist is alive to the possibility and will proceed cautiously, keeping an eye on the effects of D.D.T. on the balance of population. The medical entomologist has no such anxiety, since the insect parasites of man are remarkably free from other parasites and predators.

ARTERITIS OF THE TEMPORAL VESSELS

In 1934 Horton, Magath, and Brown,[1] of the Mayo Clinic, reported two cases of an affection they named "arteritis of the temporal vessels." With the recent reports of Kilbourne and Wolff[2] and Cooke, Cloake, Govan, and Colbeck[3] a further 36 examples have been observed, and the clinical picture can now be recognized. The disorder has not been seen below the age of 55, and women are attacked twice as frequently as men. The illness commonly starts with an acute febrile episode, malaise, and muscular pains; in their wake follows a period of ill-health marked by the features of a general toxaemia, low fever, loss of weight, generalized aching, and weakness. This phase may last as long as nine months before symptoms due to occlusion of the temporal artery, or less often some other cranial vessel, indicate the nature of the disease. The spread of the inflammatory process to the temporal artery is accompanied by intense fronto-temporal headache; the vessel may be visibly thickened and the overlying skin red. In many cases pain in the jaw or occiput has suggested that other branches of the external carotid artery were diseased. Two other groups of symptoms have been noted: first, confusion, stupor, or coma, attributed to cerebral arterial disease, though evidence of focal damage to nervous tissue has rarely been found; and, secondly, visual loss, often amounting to blindness—in some of these patients the ophthalmoscopic appearances have been those of occlusion of the central retinal artery, but in many the visual defect has been disproportionate to the visible retinal disease.

The outlook was considered good by those who described the earlier cases, and in the greater number reported the disease appears to have ended in recovery. Doubt has been cast on its benign nature by Cooke and his colleagues, who have recently recorded seven instances, of which three patients died and only one regained good health. In those who have survived, the duration of the illness has varied from three months to over two years.

[1] *Arch. intern. Med.*, 1934, **53**, 400.
[2] Ibid., 1946, **24**, 1.
[3] *Quart. J. Med.*, 1946, n.s. **15**, 47.

The morbid anatomy of this condition has excited some dispute. Horton, Magath, and Brown, from the study of an excised segment of temporal artery, believed the process to start as a localized periarteritis and described cellular infiltration in the media and around the vasa vasorum in the adventitia. They considered the lesion to differ from those of periarteritis nodosa and thrombo-angiitis obliterans. Jennings,[4] recording the first British cases in 1938, found a chronic productive arteritis affecting all coats, with giant cells in the media; he favoured the view that it was a variant of periarteritis nodosa. Gilmour[5] was so impressed by the presence of giant cells that he named the condition "giant-cell arteritis"; it was his belief that the process started in the media. Cooke and his colleagues have pointed out the non-specific character and inconstant presence of these giant cells. These last two papers have shown the widespread nature of the affection. Gilmour found lesions in the aorta, the branches of its arch and their branches; the other authors describe them in the mesenteric and femoral arteries. There is general agreement on the obscurity of the cause of this disease; all attempts to isolate a causative organism have been unsuccessful.

There is now abundant evidence that the syndrome of "temporal arteritis" must be regarded as the local expression of a specific generalized disease of the arterial system, and the experience of the Birmingham observers justifies their comment that it is "not uncommon but rarely recognized."

SELF-PROTECTION IN THE STOMACH

The mechanisms underlying the development of chronic peptic ulcer in man remain enigmatic. Two facts, however, are not in dispute—that the condition is extremely common as a cause of chronic dyspepsia among the populations of Europe and America, and that treatment is still far from satisfactory. From time to time enthusiastic reports in the medical journals suggest that a solution to the problem of treating peptic ulcer has been found. But in a disease so prone to spontaneous remission of symptoms and so intimately associated with psychological factors, assessment of results is notoriously difficult, and none of the claims previously made has survived the test of prolonged and carefully controlled experiment. Nevertheless, any reported success for a new method of treatment deserves attention, and two recent papers by Morrison[6,7] suggest a promising line of investigation.

Working on the assumption that the gastric juice might contain a substance which protects the gastric mucosa from self-digestion, Morrison treated ten patients with radiologically demonstrable peptic ulcers (five duodenal, three pre-pyloric, and two gastric) by the administration of normal gastric juice obtained from healthy volunteers. The gastric juice was removed at 15-minute intervals over a period of three hours, after the subcutaneous injection of two doses of histamine, 1 mg., one hour apart; the first specimen was discarded, and subsequent specimens, in which the concentration of pepsin and mucin was low, were pooled, rendered neutral by sodium hydroxide, filtered, and preserved with 0.3% tricresol. This was then administered, in doses of half an ounce diluted with 2 oz. of tap water, every hour during waking hours to the patients with peptic ulcer. No other medicament of any kind was given, and the patients remained ambulant and on a normal diet. Smoking was allowed, but alcohol was forbidden. Two of the patients, the previous duration

[4] *Lancet*, 1938, **1**, 424.
[5] *J. Path. Bact.*, 1941, **53**, 263.
[6] *Amer. J. Digestive Dis.*, 1945, **12**, 323.
[7] Ibid., p. 328.

of whose symptoms was 19 and 25 years respectively, showed no improvement during three weeks' treatment. The remaining eight, who had had symptoms for periods varying from one to thirteen years, all showed relief of symptoms within 24 to 48 hours and disappearance of radiological evidence of ulcer in 10 days to 3 weeks, and had remained free from recurrence for three years.

Morrison's second paper deals with the prevention of experimental peptic ulcer in dogs by the administration of a preparation of hog stomach. Each of two groups of dogs was given 2.5 grammes of yellow cincophen (phenylquinoline carboxylic acid) daily by mouth: this substance has been found by many investigators to produce chronic peptic ulcers, indistinguishable pathologically from those occurring in man. In the control group of ten dogs chronic peptic ulcers were produced in all cases, being multiple in five animals: the ulcers were produced within six weeks in nine of the dogs and within four months in the tenth. In the second group, of twelve dogs, 1/2 lb. of a preparation of the mucosa and submucosa of fresh hog stomach and duodenum was fed to each animal daily, and the dogs were sacrificed at intervals up to four months, one dog being killed at the time of each death in animals of the control group. No peptic ulcer was found in any of the second series of dogs, though some degree of gastritis was present in eight of them.

It is to be hoped that other investigators will undertake research along these lines. There is no lack of clinical material, and if Morrison's therapeutic results can be confirmed in a larger series of patients, with adequate controls, a new and promising field of study will be opened up.

WELFARE SERVICES UNDER THE RED CROSS

After the first world war the national Red Cross Societies in this and other countries, with their raised prestige and enlarged place in public affection, took up a number of activities in addition to the continued relief of those suffering as a direct result of war. These included, in Great Britain, various forms of hospital social service, ambulance work, the training of nurses and auxiliaries, popular health instruction, and child welfare. This time the British Red Cross Society contemplates an even larger and more closely defined peace programme. The great momentum which the Red Cross and St. John Organization achieved during the war is by no means spent. Under the terms of its supplementary charter the British Red Cross Society is empowered to assist the civil population in any manner calculated to promote health, prevent disease, or mitigate suffering. Accordingly a special department of welfare services has been set up, the primary purpose of which is to supplement the work already done throughout the country by voluntary organizations and statutory bodies. Three sections are proposed—one for welfare work among and after-care of the civilian disabled, including presumably those wounded in industry, an army whose numbers have never been adequately assessed; another for the care of invalid and crippled children; and the third for the care of the aged infirm. The supplementary nature of this work is emphasized—for example, the care of invalid and crippled children will be undertaken in association with the Central Council for the Care of Cripples, the Invalid Children's Association, and similar bodies.

This Red Cross effort is not concerned with the creation of a new organization but the assistance and reinforcement of such organizations as exist. The newly appointed director of welfare services is Dr. Harold Balme, who will continue to act as medical officer in charge of rehabilitation to the Ministry of Health, but on a part-time basis. Already various forms of welfare services have been started by members of the Society in different parts of the country, and the co-ordination of these will be one of Dr. Balme's principal tasks. The mere existence of the new department will probably bring a large accession to the ranks of such workers. Plans will be made for their training, because training to the Red Cross worker, whether for peace or war tasks, is more than half the battle. At the same time the various forms of welfare work undertaken by the Joint War Organization of the British Red Cross and the Order of St. John on behalf of men and women in the Forces or invalided therefrom will go on under joint committees set up for the purpose, and the emergency help committee, also a joint organization, will continue to give financial and other aid in cases of need among war pensioners. Thus the fine work done in war will be repeated and carried on in the less exciting but not unadventurous fields of peace, and no doubt when the programme of activity comes to be formulated new occasions will present themselves and new duties be undertaken on behalf of distressed and disabled members of the community.

SEQUELS OF KERNICTERUS

That kernicterus might be responsible for many clinical syndromes of childhood and adolescence is becoming recognized.

A demonstrable mother–child Rh incompatibility in neuro-psychiatric syndromes provides suggestive support to this conception. We recall the study made by H. Yannet and R. Lieberman,[1] who found that incompatibility of this kind occurred more often among undifferentiated defectives than in a control group of organic amentias and dementias. The same authors[2] have carried their earlier investigations somewhat further. A series of 277 defectives (with I.Q. less than 30) was available, with maternal blood samples to hand. Of these children 158 belonged to well-defined diagnostic categories, such as mongolism, diplegia, post-traumatic sequelae, and this number was used as a control group. The remaining 119 were regarded as undifferentiated defectives, though it was pointed out that inadequate data and case-histories might have resulted in the inclusion within this series of a number of "organic" cases. In the control group 22, or 14%, of the mothers were Rh negative, a figure which corresponds with a basis of random selection. According to W. T. J. Morgan[3] a Rh negative woman has a 60% chance of giving birth to a Rh positive child. Hence the 22 mothers might be expected to have 13 Rh positive children—that is an 8.2% random ratio of mother–child Rh incompatibility. The actual findings in the authors' control group were 12 instances out of 22, or 7.6%. Amongst the undifferentiated cases, however, 26 (or 22%) of the mothers were Rh negative. One would expect to find in such, 15 or 16 Rh positive children; actually there were 19, or a 16% incidence of mother–child incompatibility. The difference between the two ratios (16% and 7.6%) is statistically significant.

This report tallies with the findings of L. H. Snyder, M. D. Schonfeld, and E. M. Offerman,[4] who found almost twice as many instances of Rh incompatibility in a series of 68 undifferentiated mental defectives than random selection would have warranted. A similar study of cases of high-grade defect and minor neurological abnormalities might have yielded even higher figures than those of Yannet and Lieberman, whose patients comprised only idiots and imbeciles.

[1] *Amer. J. ment. Def.*, 1944, **49**, 133.
[2] *J. Amer. med. Ass.*, 1946, **130**, 335.
[3] *Brit. med. Bull.*, 1944, **2**, 165.
[4] *J. Heredity*, 1945, **36**, 9.

TYPHOID AT ABERYSTWYTH

A first case of typhoid fever was admitted to hospital on July 27 at Aberystwyth. Other cases followed, and confirmation of the clinical diagnosis was obtained in the first case by a positive Widal test. All the cases were of a mild character. Headache was usually complained of at the onset, and there was a high temperature and no very clear-cut clinical findings. The first 22 patients were questioned carefully, and it was found that all of them had eaten ice-cream from the same source. The only other factor common to all cases was water, and both water and milk supplies in the area concerned had already been tested, with negative results.

By July 29 it was clear that the infection had been conveyed by a single barrel of ice-cream. The man who had manufactured and sold it was immediately placed under observation. A Widal test was positive 1 : 320, and on July 30 a test against the Vi antigen of the typhoid bacillus was positive 1 : 80. He gave a history of having had typhoid fever in 1938, and the bacteriological findings strongly suggest that he is still excreting the *B. typhosus*. The following statement was issued on August 4 by Dr. D. I. Evans and the Mayor, Alderman H. G. Pickford:

> Every certified suspect is being taken into hospital for observation, and in every household affected the members have been instructed as to precautionary measures to be taken. So far as can be traced no single case has occurred outside the original source of infection, which was ice-cream. The milk and water supplies are satisfactory. The town medical authorities are having the fullest support from the county medical authorities and from the Welsh Board of Health, and every precaution is being taken to prevent the spread of infection.

We are informed by Dr. D. I. Evans, who is the part-time M.O.H. for the Borough of Aberystwyth, that up to August 6 there were 51 admissions to hospital from the borough itself, and in most, but not all, of these cases the diagnosis of typhoid fever had been confirmed bacteriologically. Other cases have been notified in the districts just outside Aberystwyth.

The local isolation hospital is now full and arrangements have been made for any additional cases to be sent to hospitals outside the area. The cases so far are mainly among women and children, and it has been reported in the lay press that there are no visitors affected. At the same time, practitioners throughout the country should be aware of the Ministry of Health view: "It is feared that the disease may occur in holiday-makers who have returned to their homes in other parts of the country." It seems that secondary cases are now appearing, and therefore the likelihood of cases arising in places far removed from Aberystwyth is the greater. In view of the fact that the primary source of infection was not stopped until July 29 further cases may occur up to the middle of August.

An appeal to local authorities to intensify their efforts to ensure a larger uptake of the welfare foods which have proved so important to the health of expectant mothers and young children is made by the Rt. Hon. Joseph Westwood, M.P., Secretary of State for Scotland, in a Department of Health circular. The Government has decided to continue the welfare foods scheme for expectant mothers and young children as a supplement to the family allowances scheme. The welfare foods scheme, however, is not being restricted to families entitled to a family allowance. The foods will remain as at present, milk—liquid milk or, alternatively for infants, national dried milk—orange juice and cod liver oil, or vitamin A and D tablets in place of cod liver oil for expectant mothers. There will be no change in the quantities to be made available. But liquid milk is to be available under the scheme at a cost of 1½d. a pint instead of 2d. a pint; the price of national dried milk is reduced from 1s. 2d. to 10½d. per tin; and cod liver oil—or vitamin A and D tablets—is obtainable free. Free milk and orange juice will be allowed automatically to people receiving public assistance or payments from the Assistance Board. Local authorities are notified that application forms for free milk and orange juice can be obtained from the Ministry of Food if they wish to have a supply for women in their area at, for example, maternity and child welfare centres. In a circular to welfare authorities in England the Ministry of Health draws attention to the Government's decision to continue the existing welfare foods scheme with some slight modifications, as a supplement to the family allowances scheme, though the welfare foods scheme is not being restricted only to families which are entitled also to a family allowance. The welfare foods scheme has proved its importance to the health of expectant mothers and young children and full advantage should be taken of it. The Minister therefore asks welfare authorities to intensify their efforts to ensure a larger take-up of the welfare foods.

Correspondence

The Plebiscite

SIR,—The Representative Meeting of the British Medical Association has decided, and quite rightly, to take a plebiscite of the profession. It is to be regretted, however understandable, that there should have been uncertainty and some confusion over the terms of reference. We are approaching the most crucial moment in the history of British Medicine, and it is absolutely vital that the terms of reference should be crystal clear, so that no doctor can be in any doubt as to what he is being asked to decide, together with all the implications of that decision. The Health Bill is now past its Third Reading, and it is obvious that any changes will be in matters of mere detail only. The ring fence described by Dr. Dain is complete, and the medical profession is invited to walk in. Upon the main structure—the central and general organization, hospitals, Ministerial powers, direction of doctors, sale of practices, and so on, and so on—upon such as these the profession has not been, and will not be, consulted, nor was it ever intended that it should be. Our negotiators are invited to negotiate—but it will be upon matters of detail, upon regulations which the Minister may make, upon terms of service.

Herein lies the danger. Many may say: "What harm can there be in that, if we can do so without prejudice?" Unhappily, and this is particularly true in dealing with the Government, there is no such thing as "without prejudice." It has been shown time and time again, and it needs shouting from the house-tops at this moment, that it is impossible to negotiate on detail without at the same time conceding principles—those principles which the representatives of the profession have affirmed, and reaffirmed, as fundamental. Once we are committed to discussion of detail, the flank of principle is turned, and our position becomes untenable. There is no recovery.

If any man still doubts that the Government intend to pass and to implement the Health Bill as it stands, let him read the nauseating statement with which Mr. Bevan concluded his speech on the Third Reading. In such circumstances, and having ensured by personal contact that doctors are fully aware of the implications of their action, the question to each should be just this, "Are you prepared to enter the Government Health Service as it stands?"—answer, "Yes!" or "No!".—I am, etc.,

Derby. E. D. BROSTER.

Health Service Bill

SIR,—There has been a disquieting silence on the part of the leaders of the medical profession concerning the policy, if indeed they now have a policy, which they would recommend the rank and file to adopt *vis à vis* the National Health Bill, soon to become an Act without the adoption of any but minor amendments. The appearance of so many letters on the subject in the *Journal* demonstrates the continued interest of the profession in the subject, even if the variety of opinions expressed approximates too closely to the number of writers.

Why this prolonged silence? Is it because with Machiavellian guile the Minister of Health has succeeded in dividing the profession against itself, favouring the Universities and teaching hospitals, granting the latter privileges that he denies the non-teaching hospitals, at the same time promoting the dictatorial attitude which so many good men and women so easily acquire?

Were we wise in seeking to have so much decided at the regional level? Have we so little trust in, and so little influence on, the men and women among whom we live—and from whom our incomes are derived? Surely this is a defeatist attitude? If we cannot influence our neighbours, what prospect is there of influencing a more distant body and making it aware of our local needs?

A great danger of the Bill is that it aims at stereotyping the country's medical services. The Minister of Health, as the grand panjandrum, will direct the specialists of the teaching hospitals, the prima donnas (the Minister's description),

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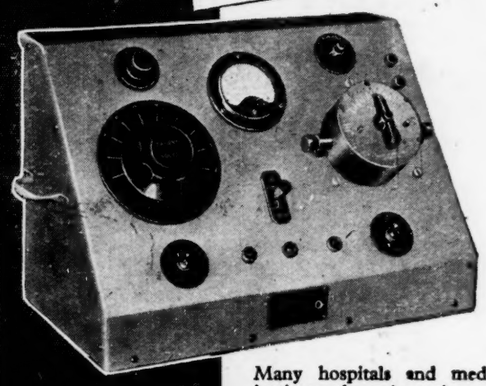

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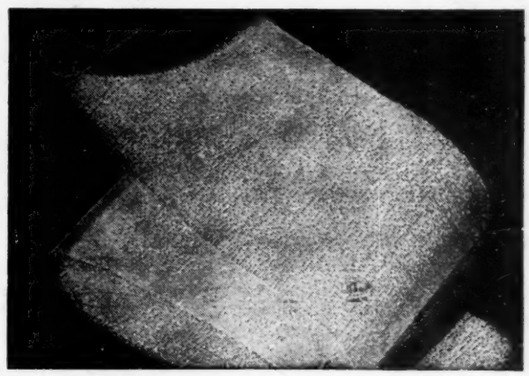

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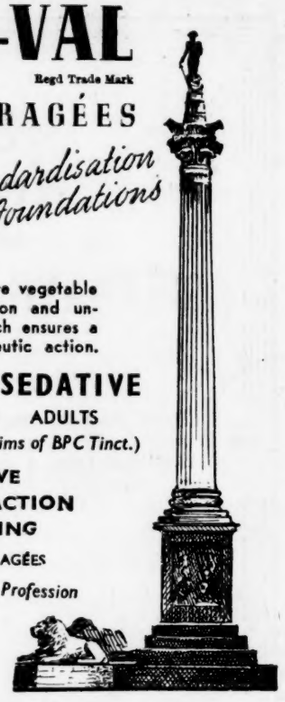

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who in turn will direct the rest of the ballet, consisting of the medical staffs of the non-teaching hospitals. In this performance the general practitioners are to be relegated to the position of supernumeraries, scene-shifters, and such like.

Now no medical service will be satisfactory unless the general practitioner is satisfactory. Properly educated and organized for his work, not only would he deal more satisfactorily with early illness and thereby make much hospital treatment unnecessary, but could engage in much at present neglected research work, which probably cannot be, and certainly has not been, done in hospital. Illness has an ante- and a post-hospital stage, and until that is fully recognized and acted on there will continue to be a deplorable amount of chronic illness.

I think the account of the grand panjandrum ended "and the gunpowder ran out of his heels," or was it boots? If the Minister of Health pursues his present course he will find his gunpowder similarly run out. I suppose it is too late for the slogan "Negotiation not dictation" to be effective.—I am, etc.,

London, W.8. HAROLD H. SANGUINETTI.

SIR,—I trust that now the Committee Stage of the National Health Service Bill is completed Council will give us a definite lead. The road to hell is paved with good intentions, and "intentions," and those on minor points, rather than "promises" or "changes," are all the Minister has conceded, according to your analysis of the Bill's Committee Stage. (*Supplement*, July 20, p. 13.)

The profession is in a state of bewildered frustration. Few, I believe, like the Bill. The majority are apathetic, resigned, or ignorant. We have had to refrain from playing the Minister's game by fighting shadows, but now he is committed and the issues are becoming clear.

Let us not now cloud the fundamentals by discussing terms of service or details of administration. Our seven points can be converted into something concrete—e.g., the removal of direction, the removal of the penal clauses, etc. The issue is freedom, and with a proper lead now a large part of the apathy will go. Let our consultant friends remember that theirs may be, at present, a gilded cage, but it is a cage nevertheless, and the Minister is not unaware of the maxim *divide et impera*.

The contumely with which this Minister has from time to time treated the profession and its representatives makes it certain that no satisfactory arrangements which will be respected by him or his successors will ever be made until he has been fought and beaten on some major issue. He has to be converted from his Fascist concepts by a wholesome course of medical discipline.

The time for fighting is now. We have the power; the public believe we have the power. Let us not have feet of clay.—I am, etc.,

Wolverhampton. ROBT. S. V. MARSHALL.

SIR,—There is one point about which many of us are concerned at the present time. This is the question of victimization of members of the profession as a result of impending legislation. There are many men who are either bound to lose a portion of their income or, in the case of certain specialist branches, to lose the whole of the capital value of a purchased or carefully built-up goodwill, without hope of compensation, if some sort of safeguard is not provided.

Whatever view any medical man may take of things to come, either antagonistic or laudatory, the profession as a whole would be solid in fighting rank injustice. If the B.M.A. takes the attitude that, as an essential preliminary to accepting and recommending Government proposals to the profession, a tribunal of suitable composition should be established to guard against what amounts to a total capital levy, it would have the profession behind it to a man.

No trades union would allow, or be permitted to allow, victimization of a single one of its members in coming to agreement with the political caste—for caste it is.

This is not a question of politics but plain justice. Even a criminal is not deprived of his all. One can only surmise that some of us, having dared to enter the profession and develop certain branches in advance of State provision, have somehow qualified as superior criminals, whose professional goodwill can just be confiscated by the bureaucratic machine. If the B.M.A. does not stand firm on this point it will not only lose our respect but many of its members.—I am etc.,

London, S.E.5. GUY BOUSFIELD.

The Public and the Bill

SIR,—Mr. Aneurin Bevan, the Minister of Health, must be none other than Mr. Bevan, the Minister of Housing, who forgot to order the bricks. He has offered the public a complete national health scheme to start in 1948, but he has forgotten the medical personnel. It is quite definite that two or three times the present number of doctors and nurses will be required if the Minister is to fulfil his promises, and yet he has cut off the supply of new recruits at the source. By pouring scorn on the voluntary system with its flag days and its charity he has cut down subscriptions to the larger hospitals, which had to close wards as a result, and by describing the smaller hospitals as inefficient and unfit for the training of nurses he has caused the junior staff to leave these hospitals, with the result that they have had to close.

The medical student is to be called up in just the same way as other boys, and the result is that many of these will not feel inclined to undertake the long and tedious course which is required, when they have finished their military service. Surely it would have been wiser to have let the medical student carry on with his studies when he left school and do his military training at the end of his course, when he is a qualified doctor? The Services will require doctors, and so many will have to do their service both before and after their medical course. I think the public should know these facts, as they are shortly to begin paying very large weekly sums for something of which there is little hope of fulfilment—I am, etc.,

Camberley. LESLIE HARTLEY.

Direction under the Bill

SIR,—There are many who approve of a National Health Service. There are many who do not. But on the issue of direction there can be no Britishers who are not against it. No amount of side-tracking can get over the following: If a man enters the Service he can be directed; if he does not enter, as he cannot use the hospitals, he will starve. The matter is really national, as well as personal, and if we doctors, in summer, cannot spare time to point out to our patients that Magna Carta and its amplifications are nearly strangled, then we deserve to suffer the loss of personal freedom. We must somehow find the time and energy to get every patient who is against the National Health Service, or has doubts, to write to the Prime Minister. *Then* get the local M.P. to ask in the Commons the number of these letters, and force an honest reply. If we do the job well, the number, I believe, will be a good half of the adult population, and if our servants of State (so-called) choose to ignore that number, then the Press will do the rest of the job.

To those practising in predominantly Labour areas: point out to the individual that there isn't any risk of indirect punishment via the T.U.C., as even this Government hasn't enough spies to do that.—I am, etc.,

Stamford. A. HENRY GREGSON.

Hours of Work under the Bill

SIR,—We have still no information from the Minister of Health, nor from the Negotiating Committee, as to what hours of work per day, or week, are proposed for the State Service. Remuneration, as in other services, must be related to hours worked, off-time periods, and pay for overtime. Without this information it is impossible to evaluate the remuneration, or answer anything in the way of a referendum.

One cannot suppose that the Ministry will require us to work a twelve-hour day with no week-ends off and two weeks' holiday in the year, as at present many of us do. Such doctors' hours of work are those of the worst period of the Industrial Revolution. May we have this very necessary information from someone, please?—I am, etc.,

Birmingham. W. J. BURNS SELKIRK.

Regional Hospital Services

SIR,—The regional hospital scheme of the Health Service Bill aims at remedying defects in the present hospital services. Most of these are traceable to want of co-ordination between institutions, to want of co-operation in the public interest. History is our warrant for saying that the successful schemes of public service have been those in which a primary and basic purpose has been clearly seen and consistently followed; that on the other hand the failures have been those in which secondary considerations have been allowed to interfere in the making of the scheme's pattern.

There will be no quarrel with the dictum that the satisfaction of public need should be the basic purpose of this scheme and should dictate its pattern without serious interference. This purpose would have had a fair prospect of being fulfilled if a directing regional board, experienced in public administration and finance, had been given control of all hospitals in an area, subject to an obligation to consult the governing body of a university medical school on questions that concern the appropriate use of institutions, the sharing of duties between them, and their medical staffing. In the Provinces this is not to be the plan.

Regional boards will all need, to complete their schemes, a group of central institutions manned by the most experienced consultants and specialists, to serve as a last court of reference for patients who present the most difficult problems of investigation and treatment. The plan of the Bill withdraws from the direction of regional boards the institutions that are best equipped for this function, and sets them apart under separate governance on the ground that they are to fulfil a special function, that of teaching. The selection of patients for admission to these "teaching hospitals" will presumably be based upon the carrying out of this duty, which is the reason given for their segregation. This is surely an example of allowing a secondary obligation to mutilate a scheme to the serious detriment of its primary obligation.

I cannot, in any space that you, Sir, could allow me, mention all the difficulties and disadvantages that this division of authority is likely to create. Under such a uniform scheme as I have envisaged, the medical schools would, with the support of the Ministry, have had no difficulty in obtaining the teaching facilities that they need for their students. The means that the Bill offers them are not only clumsy and insufficient from the administrative point of view, but also cut across the prospect of a service that will give what the public needs. Incidentally, it recreates and stereotypes caste distinctions between hospitals, which have been one of the chief defects of the past system, or want of system, and which every wartime hospital administrator had good reason for recognizing as such.

No material change in the Government plan is now to be expected, but when those who elaborate it discover that there are not in the provincial centres any "teaching hospitals" comparable to the teaching hospitals of London which house, maintain, and direct medical schools, what then? Medical faculties and faculty boards are the only bodies which possess the experience necessary to give expert advice to regional boards in the professional matters mentioned above; is the allocation to them of this duty and privilege possible within the Bill's framework?—I am, etc.,

Liverpool. K. W. MONSARRAT.

An Aspect of Government Salaried Service

SIR,—In view of the threatened salaried service that is upon us, I would like to call attention to a previous situation when medical practitioners were paid salaries for full-time State service under contract to the Government; especially as in conversation with my colleagues in various departments of medicine I found few who realized that such a sequence of events had taken place.

In September, 1939, many resident medical officers were virtually "drafted" into the Emergency Medical Service. I believe that a very high percentage of these medical officers accepted the posts gladly, and with a great deal of willingness to do their utmost under any circumstances in the threatened devastation by air attack on their country, and were unconcerned by considerations of the salary that might be meted out to them, provided they were reasonably fed and housed in accordance with conditions that might prevail under total war. Many were gratified at the princely sum of £350 per annum, plus board and lodgings, that they received under Government contract, and which was indeed a financial satisfaction to those who at the time were only receiving £50 and keep for full-time services; thus they were able to undertake domestic commitments in accordance with their age and station in life which would otherwise be prohibited owing to finances. Approximately six months later, however, when Britain had not suffered the hardships that had been anticipated, these same M.O.s were asked to waive their contracts and accept £200 per annum, a reduction of salary of over 42%. The penalty for not conceding to the request was appointment to another area, usually more uncomfortable, with its attendant personal and professional inconveniences, or drafting to military service. This time a direct contract was not given to the M.O., but he was paid from a central pool, often very much in arrears and with no contract or guarantee that his income would remain stable for a greater length of time than three months. Soon after this the major blitz on Britain commenced with numerous areas affected, entailing very continuous and arduous work for this class of M.O. and no reinstatement to the £350 basis. The first generalized blitzing of Britain quietened down considerably by the summer of 1941, and within three months the same class of M.O., on appointment, received remuneration to the extent of £120 per annum, a further reduction of 40% from his immediate predecessor, and a total reduction of over 65% of what the Government had originally *contracted* to pay one class of its employees.

Admittedly this occurred during a national emergency, and any hardships due to these reductions would be willingly undergone, except, if the public press is to be believed, that most other employees on essential services did not have to share these financial "cuts," in spite of the fact that they had not had the years of training and personal monetary outlay in acquiring the skill for specialized wartime employment, therefore presumably would be better able to stand reduction. Were these reductions only made on the medical profession because they were unlikely to strike, as opposed to workers who have since shown their irresponsibility by striking, and thus have been able to demand their "rights" and maintenance of remuneration and comfort?

I agree that all this is a hatchet that is best left buried, and the necessity of bringing it into the light at all only occurs when a similar situation may be allowed to reappear through insufficient warning to enough of the people concerned. It has been cited that the Government, from the financial standpoint at any rate, will not be stinting in their remuneration of the State doctor, but what value can be placed in their contract, especially when they are spending such "global" figures? Will they not have to cut their expenditure some time because the taxpayer cannot, or will not, stand the pace or the Treasury cannot afford it? How will they begin to economize? Will they reduce the doctor's scale of capitation fee or basic salary, because he will carry on his job in spite of it? Or the standard of equipment required in hospitals? They will continue to aid the sick, too. Or will they economize in the wages of the industrial workers, who have been known to lay down their tools when they have a grievance?

Please do not think that my only objection to State medicine is on the financial side, for I am entirely opposed to a lay dictatorship of medicine on the totalitarian system, and honestly believe that politics and trade unionism are best left to those who have not been acquainted with the Hippocratic oath. My feelings have already been stated more adequately than my ability to express them by others of your readers, but hitherto I have not seen this particular aspect brought up.—I am, etc.,

Wheathampstead. C. F. C. PARKINSON.

Black Tongue and Oral Penicillin

SIR,—We read with great interest the letter on this subject by Dr. P. D. Bedford (July 13, p. 63). We should like to bring to your notice that two cases of "black tongue" were reported at the meeting of the Royal Medico-Psychological Association on Feb. 14, 1946, by one of us (F. M. S.).

One was observed after oral administration of sulphadiazine and the other of penicillin. The local effects were similar to those described by Dr. Bedford, and the penicillin case showed in addition distinct symptoms of nicotinamide deficiency—such as skin changes, sensory disturbances in the legs, abdominal pains, general fatigue, inability to concentrate, and memory disturbances. In the latter patient it was also possible to reproduce the same symptoms with a second course of oral peni-

cillin and to examine the nicotinamide status simultaneously. The level of nicotinamide methochloride in the urine before penicillin was given for the second time was low but above the deficiency level. It fell considerably during dosage to a level indicating a deficiency. After discontinuing penicillin the nicotinamide methochloride level rose higher than before. When at this high level penicillin was given orally for a third time the nicotinamide methochloride output did not fall below that of the nicotinamide deficiency level, and no local changes were observed on the tongue; and only very mild general symptoms were experienced. These findings indicate that oral administration of penicillin can cause a nicotinamide deficiency, as has been found after oral administration of succinyl sulphathiazole or sulphaguanidine by one of us (P. E.) and by Hardwick, by their action on the intestinal flora. Whether the black-tongue symptom, which is rare in human but common in canine nicotinamide deficiency, is partly due to an additional local effect of penicillin on the tongue has still to be investigated. The details of our findings will be published in due course.—We are, etc.,

P. ELLINGER.
Lister Institute of Preventive Medicine. F. MACKENZIE SHATTOCK.

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The "Intractable" Vesico-vaginal Fistula

SIR,—The correspondence on this subject is of deep interest to all who have the management of these difficult cases under their care. I am without experience of the conditions existing in Bantu, but in this country there are other fistulae which occur in the bladder at a higher and more lateral level than those located near the urinary meatus; these may involve the ureter as well as the bladder. They are not suited to the approach of Marion Sims.

I would draw attention to an alternative to colonic transplantation, and that is the suprapubic transvesical approach. The bladder is opened by an adequate incision, as in suprapubic prostatectomy, the access afforded is good, the technique is not difficult. In addition to the ordinary case, multiple fistulae are readily closed, and ureteric damage remedied by transplantation of the divided end into the *bladder*. In all cases the operation concludes with suprapubic bladder drainage. This technique originated, I believe, with the late Mr. Swift Joly, and if it is adopted I cannot think that many cases will call for repeat operations nor for colonic ureteric transplantation.—I am, etc.,

London, W.1. EVERARD WILLIAMS.

Carcinoma of the Bladder and Vesical Calculus

SIR,—Since 1833, when Bayle first drew attention to the relationship between bladder calculi and tumour, calculi have frequently been described in association with bladder tumour. Ash (1940), however, in a study of 2,743 cases of carcinoma of the bladder recorded that in no case could he find any association of a calculus with the formation of a bladder tumour. In a recent investigation which I carried out on 189 cases of bladder tumour treated at the Cardiff Royal Infirmary, 6 of the cases had a history either of having passed stones *per urethram* or of stones having been removed suprapubically prior to the appearance of the symptoms related to the tumour. There was no direct evidence in any of the 6 cases that the calculi were the exciting factor in the production of the tumours. In one other case, however, there was more definite evidence that the bladder tumour may have been due to the presence of a stone.

Case History.—The patient, a male aged 57, was admitted with acute retention. He gave a history of haematuria and frequency of four years' duration. Cystoscopy was impossible. At suprapubic cystotomy I removed a large calculus, the size of a walnut, which had become impacted in the internal urinary meatus. After removal the base of the bladder was inspected but no obvious lesion was observed. There was certainly no obvious tumour growth. Six months later he was readmitted with haematuria of three months' duration. At operation a papillomatous growth was found surrounding the internal urinary meatus at the site where the stone had previously been impacted. Histologically the tumour was a papillary carcinoma with very marked squamous metaplasia present.

Squamous metaplasia in papillary carcinoma was seen histologically in 7 of the tumours of my series, and in all of these tumours there was marked histological evidence of long-standing inflammation. Clinically, 4 of the 7 cases gave a history of chronic renal tract infection over a period of from three to ten years; in the other 3 the history of infection was much more recent. I personally feel that though there is undoubted evidence that chronic irritation, whether in the form of chronic infection, or of a calculus, or of vesical schistosomiasis, does produce bladder tumours, yet in a number of cases the squamous changes are secondary and arise in a tumour which is already present in the bladder.—I am, etc.,

Cardiff. J. GUNN ROBERTS.

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Drug Eruption after Sodium Pentothal

SIR,—Drug eruptions due to sodium pentothal, as Dr. G. A. Grant Peterkin (July 13, p. 52) points out, must be exceedingly rare. After using the drug for seven years I had never seen any form of eruption until two weeks ago.

The patient had a tuberculous lung and a hysterectomy for fibroids was to be performed under a spinal anaesthetic. The patient, wishing to be put to sleep, was given 10 ml. of a 5% solution of sodium pentothal and then turned on her side for the administration of the spinal anaesthetic. Within a few minutes and before any antiseptic had been applied to the back, large urticarial weals occurred on the back and quickly spread all over the body. Her eyelids swelled considerably and her lips to a small degree. Fortunately no swelling of the tongue occurred.

The operation was proceeded with under light nupercaine and as the patient was restless a few more mls. of pentothal were given. At the end of the operation all the urticarial weals had subsided but the eyelids were still a little swollen. Next day the patient was quite well.—I am, etc.,

Bristol. R. HASTINGS MOORE.

Total War on Cancer

SIR,—In his interesting paper on this subject (July 20, p. 77) Mr. G. F. Stebbing omits to mention one valuable line of attack and research. It was known to witches, and is a matter of scientific observation to-day, that intractable cutaneous papillomata of many years' standing are curable by suggestion. This discloses the fact that the body can produce, or be persuaded to remove, some simple new growths by activities engendered in the psyche. Emotional states also are known to be a source of variation in the chemistry of gastric secretions. When, therefore, Mr. Stebbing writes "Cancer starts in every case with a single cell or group of cells in the body that revolt, as it were, against the general system," we already have a hint that conflict in the personality may, by its effects on tissue fluids, be the cause of inviting and promoting this daemonic activity.

I believe that authentic cases of spontaneous disappearance of malignant growth, if rare, are known to exist. This would be explainable on these lines, as also the fact that carcinoma of the breast occurs more often on the left, the more unconscious side of the body. For in using dreams to understand the depths of the personality the psychotherapist becomes familiar with the fact that, in our right-handed civilization, the left side of the body and left-handed symbols represent something at a more unconscious level than similar objects represented on the right. Hence an assault on the soma engendered unconsciously in the psyche might well be expected to express itself in a left-sided manner.—I am, etc.,

Exeter. E. JOYCE PARTRIDGE.

SIR,—Why, in the background of the admirable paper "Total War on Cancer" (July 20, p. 77), is there the suggestion of competition between the wars against different kinds of disease? Why, in fact, is there any hesitation in applying what we have learned of the finance of total war to the struggle for freedom from the ills to which our bodies are now heir?

Having returned from India but a couple of months ago, I cannot attempt to answer these questions, but a visit to Madanapalle in 1944 (to help a doctor with his mathematics) taught me a reply which may be worth stating now. As I

watched the fight against tuberculosis and realized how slow would be the returns from all the labour of operations and of nursing, it became evident that the costs of a total war against tuberculosis should fall as much as possible on future generations, which would receive most of the benefit. The implication of this is that the costs of such a fight should come from Government loans, and immediately, as the mobilization of resources and the training of personnel will be slower than for ordinary war, that no institution which is now doing good work in the fight should be frustrated for lack of funds.

To broaden the picture, the war against malaria is comparatively so simple as to be chiefly a matter of finance. In my own time in Bombay I have seen malaria cleared from the southern part of the island by routine expenditure from municipal budgets. Leprosy stands much on a par with tuberculosis as regards speed of returns. For cancer I get the impression that it is future generations that will benefit most from well-coordinated research, and so the cost of research into cancer might well come from loans—though this suggestion may seem unnecessary in England.

As regards education of the public to co-operate more effectively in reducing the mortality from cancer, has not investigation advanced so far that the main demand on the man in the street can be crystallized in slogans? So far as my education has gone I'd suggest the following: "Suspect cancer early without fear." "Cancer the most curable of diseases if taken quick." But such slogans would doubtless be the concern of local committees.—I am, etc.,

Wilson College, Bombay. JOHN MACLEAN.

Trilene in General Practice

SIR,—Drs. A. Barratt and S. H. B. Platts are to be congratulated on their article on the use of trilene in general practice (July 6, p. 10). I am in full agreement with their main conclusions, but I feel that some points about administration warrant further discussion. The authors prefer a Clover's inhaler to the type of apparatus which delivers a fixed percentage of trilene, because patients vary in their response to, and need for, the anaesthetic. I have used Freeman's inhaler, which delivers a fixed percentage of trilene, in obstetrics in my practice for the past eighteen months, and find it excellent for producing analgesia. The point which I feel has been overlooked in the article of Drs. Barratt and Platts is that the amount of anaesthetic vapour inhaled by the patient is controlled not only by the inhaler used but by the rate and depth of the patient's respirations. Thus, I have found that towards the close of the second stage of labour, if the patient is told to breathe deeply and rapidly, with her finger on the small hole of the horizontal tube of the Freeman's inhaler to increase the percentage of trilene, one can obtain analgesia adequate for the delivery of the head in a normal case. Some patients go completely over for a minute or two with this procedure. The perineum can be stitched by repeating this process, but if anaesthesia is required I prefer to give trilene on an open mask, under which is run a constant stream of oxygen. Without the oxygen, tachypnoea and cyanosis may develop rapidly, and this makes me dubious about using the Clover's inhaler with the bag to produce anaesthesia. Perhaps the duration was short enough in the cases described to avoid these side-effects, but they can on occasion develop very rapidly at quite an early light stage of anaesthesia.—I am, etc.,

Nelson. T. D. CULBERT.

Penicillin Therapy and Control in 21 Army Group

SIR,—May we be permitted to amplify the information given in the kindly review of *Penicillin Therapy and Control in 21 Army Group* in your leading article (July 13, p. 56)?

It is said that "the reader has to delve" because the various reports on the special investigation into the treatment of war wounds are not summarized. They are summarized and analysed in a complete article (pp. 143–156); as explained in this article, the technique of treatment approximated closely to the methods detailed in a separate publication (*Memorandum on Penicillin Therapy in 21 Army Group*), and to save space these were not repeated.

It is also stated that the question, "Is it possible to achieve good results by the simple and economical method of local application?", is not answered. The pioneer work of Florey and Cairns, confirmed later by Fraser, Jeffrey, Bentley, and others, supplied the answer to this question. We gave figures dealing with local penicillin both in prophylaxis (pp. 22–3) and therapy (pp. 144–5); it was shown (p. 144) that in a group of 2,359 patients whose wounds were sutured with the help of *local* penicillin only, excellent results were obtained. There is no doubt that local applications of penicillin powder are effective both in prophylaxis and therapy, but we wish to emphasize that, in our opinion, systemic administration in addition is essential to secure the maximum protection in those with complicated and lacerated wounds, especially if there are retained foreign materials.—We are, etc.,

A. E. PORRITT.
London, W.1. G. A. G. MITCHELL.

Of Secondary Importance

SIR,—I believe I am correct in stating that, according to a decision of the House of Lords, a professional man does not come under the law relating to master and servant as far as his employer is concerned. Mr. Bevan is reported to-day (July 24) to have said that "a good doctor may be a bad servant and if he fell short of what was required he would be liable to be removed." We do know now where we stand; the public may in future be deprived of the services of a good doctor if he does not entirely conform to the detailed requirements of civilian administrators. Clearly the well-being of patients is to be of secondary importance!—I am, etc.,

St. Mawes. B. H. SHAW.

Book Reviewing

SIR,—I hesitate to reply to Mr. H. Osmond Clarke's letter of reproof (July 20, p. 102), lest he goes further and regards me as a general paretic. Only on one score has he any grounds for complaint against my pomposity, and that I think because he has misinterpreted the word "so" before "unsatisfactory" to mean a pedantic disparagement instead of simply "therefore" (June 1, p. 837).

The very worst person to review a book is one who knows the author intimately; he should no more do it than a surgeon should carry out a major operation upon his own child. To achieve objectivity in the space you allow your reviewers, a certain *ex cathedra* method is inevitable. Perusal of most medical reviews reveals this general tendency. Complete objectivity is assured by anonymity. We are your agents whom you select, presumably, because of our practical knowledge of a particular subject, our familiarity with the literature, and our insight into the interests of the very different groups of your readers. We take this duty seriously. Mr. Clarke has shown little reason for his objections. It is no part of a reviewer's function to parry an author's statement with statistical findings from the reviewer's experience. What I did say, and what Mr. Clarke is prepared to pass by, is that having agreed with older authorities that operations for cruciate ligament injury are rarely indicated, the author of the book had nevertheless found 17 patients upon whom to carry out an unproved procedure of his own invention, apart from the other operative measures which he describes. It is necessary that your readers know what are the merits of the author's operation. The statement that the results are dubious is merely a reflection of the author's report on the end results, and has nothing to do with the reviewer's judgment. What the reviewer does imply is that this matter was injected prematurely into the monograph, and should first have been displayed in the special literature after a proper presentation of cases before a medical audience qualified to discuss them.

"New" information was given about the function of the quadriceps muscle, and particularly the vastus medialis section. Unorthodox statements were made so dogmatically that, as there was no scientific anatomical or physiological support for these statements, I refused to accept them. These were examples of much else which suggested superficiality, over-

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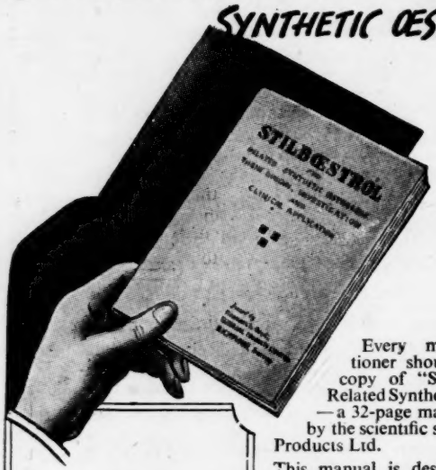

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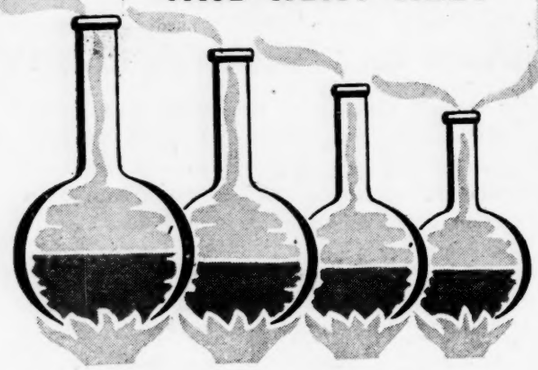

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statement, and premature publication, which one hopes will not be a feature of British medical monographs. That is why such criticism should be public. I appreciate that the author of the book in question had worked very hard, and so have many other young men who have seen a large amount of work under Service conditions, and who have dealt with large numbers of knee injuries. We would also like to have heard from them. There is still room for the publication of a work dealing with internal derangements of the knee-joint arising from the experience of the recent war.

Finally, I am a practising surgeon, not yet senile, and sign myself,—

"ONE OF YOUR REVIEWERS."

Socialism and the Pay-bed

SIR,—I am surprised that you find three letters to support the contentions of Mr. J. B. Macalpine (June 22, p. 968). Mr. Macalpine apparently feels himself capable of "instructing the community in biological affairs." As a medical man, "trained in biology and in a position to understand genetics," I consider the letter a confused, unscientific piece of snobbishness.

May I ask for a definition of the "desirable genes" which are in danger of being "lost and gone for ever"? May I ask for evidence that "social desirability and service" are hereditary? Is it the contention that acquired characteristics are also inherited? Or is the characteristic of "a fine level of intellectuality and sensibility" only "acquired" by "strenuous effort at perfection in the art of living"?

The contention of the whole-time medical officers of the Middlesex County Council is that privacy should be obtainable on medical grounds. Surely they would agree that "mental sufferings," which Mr. Macalpine so readily attributes to his "highest types," would indeed be legitimate grounds for isolation.

In what way can it be said that the abolition of the pay-bed is the "stamping out of desirables"? There seems to me no connexion whatsoever between this bigoted approach to the principles of genetics and Socialism and the subject of the pay-bed. To make special medical provision for these "superiors" because of their ability to pay is to try to perpetuate a sense of values only appropriate to the Victorian age. I am glad that, in common with the medical officers of the Middlesex County Council, I have never possessed this "sense of value."—I am, etc.,

Hessle. IAN C. GILLILAND.

A New Decalogue

SIR,—*Magna est veritas et praevalebit.* The tag sounds more impressive in Latin, which serves to accentuate the complete falsity of the sentiment. The wishful thinking that inspires it is, in fact, little short of pathetic in the light of experience. The subject is brought into relief again in the new book on Morell Mackenzie reviewed in your columns on June 8 (p. 880). This is, perhaps, not the place to go into a detailed consideration of the pros and cons of this case. But one comment, I think, is justified, if not demanded, and that is the nauseating unscrupulousness with which the situation was manipulated and the facts distorted from political motives. Nausea is the appropriate reaction to this little cameo of history.

Can we draw any reassuring lesson from this episode? Can we say that things are better at the present time? Have we developed in the interval a more scrupulous respect for facts and accuracy of statement? Making every allowance for its "many-sidedness," it would seem that even to-day, when the muddied hand of politics touches science, truth will suffer. That it inevitably will prevail is a dangerously misleading notion. Rather, the tag should be altered to read that truth is a fragile flower that every man (even the politician) must, on his conscience, cherish. I should like to see a re-statement of the relevant Commandment in exceedingly intimidating terms beginning: "Let no man tamper with the Truth." A modern Moses in a new decalogue would, I am sure, feel to-day that first place should be given to this injunction. Most of the others are of little consequence in comparison.—I am, etc.,

London, W.1. FREDERICK DILLON.

Obituary

R. E. ROBERTS, M.D., F.R.C.P., F.F.R.

By the sudden death of Dr. R. E. Roberts we have lost a man of outstanding ability, a loyal colleague, and one whose personality endeared him to all with whom he came in contact. It is not only for his scientific and administrative gifts that he will be missed, but also for that sincere genial manner and human sympathy, coupled with an urge to help others, that enabled him to see and understand the other man's point of view. These gifts often helped him to compose the differences that are inevitable in human affairs. His willingness to undertake thankless and uncongenial tasks brought burdens of worry that did much to undermine his health, so much so that during the last three years he had had to withdraw from many of his activities, particularly in London.

Born in 1890, educated at the Birkenhead School and at Liverpool University, he took his B.Sc. in 1908. He then turned to medicine and qualified M.B., Ch.B. in 1914, having gained the Junior Lyon Jones Scholarship, the Holt Medal in Physiology, and the Derby Exhibition in Surgery. On the outbreak of war he at once joined the Forces and served from 1914–18 in the R.A.M.C., chiefly in India, being mentioned in despatches. Returning to Liverpool he took his D.P.H. in 1919, but very soon turned to radiology and was one of the first small group who took the Liverpool D.M.R.E., which had just been inaugurated at the instance of Dr. Thurstan Holland. Entering into partnership with Dr. J. H. Mather, and later with Dr. Holland, there followed twenty years of very active work in which Roberts produced a series of important contributions to the radiology of bones and to the study of pelvimetry. For the most part these were published in the *British Journal of Radiology*. He also contributed a section to the standard *Textbook of X-ray Diagnosis*, edited by Shanks, Kerley, and Twining.

Thurstan Holland was the dominating figure in radiology for many years, but as he became less active Roberts gradually took his place, succeeding him as Honorary Radiologist at the Liverpool Royal Infirmary and also in teaching for the Liverpool Diploma in Radiology. In the affairs of the Liverpool Medical Institute he took an active part, and had held the offices of Vice-President and General Secretary. In London he upheld for Liverpool the prestige that had been established by Thurstan Holland, taking over the leading offices in the radiological societies. He was President of the Section of Radiology of the Royal Society of Medicine, 1937–8, President of the Faculty of Radiologists, 1939–40, and Vice-President of the British Institute of Radiology, 1938–9. He was nominated President of the Institute in 1943, but had to withdraw owing to illness. He examined for the Fellowship of the Faculty of Radiologists, and for the diplomas in radiology of the Conjoint Board, and of the London and Liverpool Universities. During the war the Liverpool diploma was suspended, but it is typical of Roberts's views on the importance of radiology and the necessity for thorough training that at his instance the diploma has been replaced by a degree in radiology, but, alas, he will not be there to direct this course when it is due to start next September. With a view to increasing teaching facilities in this course he had just resigned from the Liverpool Royal Infirmary to take up a similar appointment at the Liverpool Southern Hospital.

During the war Roberts was one of the regional advisers in radiology for the E.M.S., and he also served as Honorary Consultant Radiologist to the Army at home, in which capacity he examined all the officers who were trained in radiology at Millbank. In appreciation of all his services he was recently elected to the Fellowship of the Royal College of Physicians.

The selfless devotion with which Roberts gave of his time and energy was an inspiration to many of his colleagues, who appreciated not only all that he did, but also the willing co-operation of his partner, Dr. J. H. Mather, who made his frequent absences from Liverpool possible. Diagnostic radiology suffers a severe blow in the premature death of this devoted worker whose loss will be felt for many years not

only in Liverpool but in the radiological counsels of the country. To his wife and two daughters we extend our sympathy. A. E. B.

The sudden death of Dr. Robert Edward Roberts, at the age of 57, came as an unexpected shock to a wide circle of friends in the profession and particularly in the radiological world. It further depletes the distinguished group of provincial radiologists who did so much to build the reputation of British radiology between the two world wars. In the 'thirties a Lancashire triumvirate—Roberts from Liverpool, and R. S. Paterson and Twining from Manchester—took a commanding part in the radiological activities of the country, and on the death of both the Manchester radiologists in 1938 Roberts was looked upon as the leader of the diagnostic radiologists of the North. The claims of a busy hospital and consulting career were not enough to satisfy his energy and ability, and it was not long before he began to interest himself in the scientific, academic, and administrative aspects of his specialty. He published a number of important papers, and his early work on *x*-ray investigations in obstetrics and gynaecology soon established him as an authority on the subject.

Robin Roberts had an endearing personality which combined a scientific outlook, clinical acumen, and charm of manner in a way that won him success in whatever he attempted, and the respect and affection of all who knew him. More than any other quality it is perhaps his personal and social charm that will linger longest in the memory of his friends. A week before he died, the writer found him full of *joie de vivre*, and enthusiastic for the future. The end was brief and unexpected, as he would have wished, and British medicine is the poorer for his passing. S. C. S.

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UNIVERSITY OF LONDON

At a meeting of the Senate, held on July 24, the following appointments were made:

Neil Hamilton Fairley, C.B.E., M.D., D.Sc., F.R.S., F.R.C.P., to the Wellcome Chair of Tropical Medicine tenable at the London School of Hygiene and Tropical Medicine, from Oct. 1; George Macdonald, M.D., D.T.M., D.P.H., to the University Chair of Tropical Hygiene tenable at the London School of Hygiene and Tropical Medicine, from Oct. 1; Francis Cyril Oliphant Valentine, M.R.C.P., to the University Readership in Chemotherapy tenable at the London Hospital, from Oct. 1.

The title of Professor of Morbid Anatomy and Histology in the University has been conferred on Robert Wilfred Scarff, M.B., B.S., in respect of the post held by him at the Middlesex Hospital Medical School.

The title of Prof. Emeritus of Helminthology in the University has been conferred on Prof. R. T. Leiper, C.M.G., D.Sc., M.D., F.R.S., F.R.C.P., who retires in Sept. from the William Julien Courtauld Chair of Helminthology at the London School of Hygiene and Tropical Medicine, which he has held since 1917.

The title of Professor Emeritus of Experimental Pathology in the University has been conferred on Prof. E. L. Kennaway, M.D., D.Sc., F.R.S., F.R.C.P., who retires in Sept. from the Chair of Experimental Pathology at the Chester Beatty Research Institute of the Royal Cancer Hospital, which he has held since 1931.

UNIVERSITY OF MANCHESTER

Prof. Henry Stanley Raper, C.B.E., D.Sc., M.B., Ch.B., F.R.S., F.R.C.P., who has held the Chair of Physiology in the University since 1923, has accepted an invitation to become full-time Dean of the Medical School and Professor of Chemical Physiology, from Sept. 29.

The Council has appointed Walter Schlapp, Ph.D., M.B., Ch.B., at present Reader in Experimental Physiology and Assistant Director of the Physiological Laboratories, as Brackenbury Professor of Physiology and Director of the Laboratories from Sept. 29, in succession to Prof. Raper.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the College held on July 25, with Mr. James M. Graham, President, in the chair, the following, having passed the requisite examinations, were admitted Fellows:

R. D. I. Beggs, H. W. Gallagher, G. C. Gordon, D. B. Handelman, R. W. B. Holland, C. McT. Hopkins, P. Jardine, J. P. Lane, T. J. McCormac, M. McLearie, A. McL. Millar, G. H. Moore, J. F. Paxton, H. H. Pearson, N. A. Punt, S. Sacks, D. G. Simpson, W. M. Van Essen.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a meeting of the Council held on July 27, with the President, Mr. Eardley Holland, in the chair, Mr. William Gilliatt, C.V.O., M.D., M.S., F.R.C.S., F.R.C.O.G., was elected President to take office in September next. Robert Marshall Allan, M.D., F.R.A.C.S., Hon.F.A.C.S., F.R.C.O.G., and Sir William Fletcher Shaw, M.D., F.R.C.P., Hon.F.A.C.S., F.R.C.O.G., were elected vice-presidents.

The following candidates were elected to the Membership:

H. R. Arthur, S. J. Barr, B. E. Blair, Catherine I. Blyth, Joyce M. Burt, H. Burton, G. B. W. Fisher, B. G. Halder, R. L. Hartley, D. Jefferiss, Iola Ll. T. Jones, L. W. Lauste, Elizabeth McCallum, Margaret Orford, H. C. Perry, Dwifendra L. Poddar, Esther M. Pollock, J. E. Scott-Carmichael, W. R. Sloan, R. A. R. Taylor, E. W. L. Thompson, T. G. E. White.

Medical Notes in Parliament

The Royal Assent to the National Insurance Act was given on Aug. 1.

Parliament will reassemble on Oct. 8. The Second Reading of the National Health Service Bill is set down for that day in the House of Lords.

Hospital Finance in the Interim

On July 25 Major LEGGE-BOURKE invited Mr. Bevan to say how many intimations he had received from hospitals that they were having to dispose of their assets in default of voluntary contributions since the announcement of the introduction of a health service scheme. Mr. BEVAN replied that he had been approached by a few hospitals about their general position, but was not aware of any case of the kind described by Major Legge-Bourke.

Mass Radiography Progress

Mr. Bevan was asked on July 25 if his advisers had come to any decision as to the periods at which mass photographs of the population should be made to diagnose early cases of tuberculosis. Mr. BEVAN said there could be no standard rule about frequency of examination. Regular survey of the same groups was obviously desirable, but present resources—which were steadily increasing—still kept short of that ideal. Replying to a further question Mr. Bevan stated that the number of civilians examined by mass radiography in England and Wales up to Dec. 31, 1945, was approximately 797,000, of whom 2,900 were diagnosed as suffering from active tuberculous conditions. Of those requiring institutional treatment 830 had been admitted to such treatment up to Dec. 31 last, and admissions since then would have substantially increased this number.

Cancer

Mr. WATKINS on July 25 asked the Minister of Health to consider setting up an independent commission to inquire into the progress, if any, made by the various uses of radium in the cure of cancer.

Mr. BEVAN answered that he did not consider such a commission to be necessary, since the progress of cancer research and treatment was kept continuously under review by the bodies concerned.

Death rates per 1,000 population in England and Wales from cancer, 1936–45, were given by Mr. Bevan on July 25 as follows:

1936	1.575
1937	1.583
1938	1.616
1939	1.628
1940	1.723
1941	1.780
1942	1.834
1943	1.899
1944	1.897
1945	1.933 (provisional)

(The rates for the years 1939 to 1945 relate to civilians only.)

Although these rates showed an increase, Mr. BEVAN'S information was that earlier diagnosis was resulting in reduced mortality, which was concealed by the simultaneous increase in ascertainment through better facilities for diagnosis and treatment.

Mental Defectives in Institutions

Mr. BEVAN on July 25 regretted that figures of the number of mental defectives now in institutions were not available, but added that the number on Jan. 1, 1946, was 52,788. This, he said, was approximately 20% of the estimated total number of

defectives in the country, many of whom, however, did not require institutional care. He had authorized the Board of Control to consider plans for the provision of additional accommodation for low-grade and tuberculous patients, whose care in ordinary homes imposed great hardship upon parents.

Nutritional Standards in School-children

On July 23 Mr. WESTWOOD told Mr. Willis that all education authorities in Scotland had been advised that the classification "bad nutrition" should be used to cover only those children who, in the opinion of the medical officer, were suffering in health to a serious degree in consequence of bad or insufficient feeding. Nutrition standards were not capable of exact statistical measurement, but the findings of the school medical officers served their main purpose of drawing attention to those children who appeared to require medical supervision and, if necessary, treatment.

Prevention of Blindness in the Colonies

Mr. GEORGE HALL told Mr. E. Edwards on July 24 that the Empire and Colonial Development Subcommittee of the National Institute for the Blind, under the chairmanship of Sir Bernard Reilly, had suggested a joint tour of various Colonies by representatives of the Institute and of the Colonial Office to report on methods of preventing blindness and of providing welfare services for the blind. This tour had just begun. It was proposed to visit most of the East and West African Colonies, Cyprus, Palestine, and Aden.

Rehabilitation of War Casualties

In a reply on Aug. 1 Mr. WILFRED PALING said it could not be claimed that cases of serious spinal injury could be restored to a condition approaching normality in the sense of full mobility, but modern methods of treatment substantially reduced the mortality rate in these cases and enabled the majority of the men to get about in self-propelled or motor-propelled chairs instead of being permanently confined to bed. He estimated that, on the completion of treatment and, where necessary, training, about 60% would be able to undertake remunerative employment. Artificial limbs had been supplied in about 15,000 cases since 1939, of which 12,000 were war-injured cases. Practically all of the persons concerned had been fit to take up remunerative employment or undergo training for employment.

Mr. Paling further explained that the Plastic Surgery and Jaw Unit at Roehampton Hospital was enlarged in 1939 to deal with Service cases and air-raid casualties. Considerable advances had been made, the most important of which were the insertion of special material, known as tantalum, for the restoration of facial contours, the fixation of skin grafts by specialized methods, the making of skin flaps for amputation stumps, the treatment of chronic disease of bone, and the development of a highly specialized physiotherapy service. Co-operation with the orthopaedic unit and dental department had been developed on a large scale, and an excellent photographic department capable of producing technical cinefilms had been built up. As regards research, he made special mention of the investigations into the conditions influencing the healing of war wounds and the development of scar tissue. Mr. Paling expressed appreciation of the invaluable work done by the medical and dental officers, nurses, and other staff in the care of the patients in this hospital.

Diphtheria Notifications and Immunization

Mr. BEVAN furnished on Aug. 1 figures relating to diphtheria notifications between January, 1940, and June, 1945. He explained that the figures for, and subsequent to, 1944, reflected corrections made at infectious diseases hospitals; material for an exact comparison with the years 1940 to 1943 was not available. The details are:

Year	Original Notifications	Corrected Notifications
1940	47,165	46,280
1941	51,298	50,804
1942	42,580	41,404
1943	36,017	34,662
1944	29,949	23,199
1945 (January–June) ..	11,993	8,881

On Aug. 1 Mr. PETER FREEMAN asked Mr. Bevan to ensure that in all future advertisements recommending the practice of immunization a statement was added that 19,040 children contracted diphtheria after submitting to this operation and of these 142 died in the last five years, "in order that the public may have the full facts concerning immunization."

Mr. BEVAN refused the proposal and added that he could not agree that this would be giving the public "the full facts." He went on: "Obviously you cannot guarantee absolute immunity in every case; but the most striking facts are that the chance of a child's death from diphtheria is twenty-six times greater if it is not immunized and that deaths from diphtheria have been reduced to about a quarter of the pre-war yearly average."

Streptomycin

Mr. THOMAS BROOKS inquired on Aug. 1 what steps were being taken to import supplies of streptomycin from the U.S.A.; and what efforts were being made to manufacture it in this country. Mr. BEVAN said American production of streptomycin was too small to permit export to this country. Arrangements were being made with the Ministry of Supply and the Medical Research Council to set on foot the manufacture in Great Britain of sufficient streptomycin for adequate clinical trials.

Polish Doctors in Britain.—Sir JOCELYN LUCAS asked on July 25 how many Polish military doctors, being repatriated with General Anders' army, would be allowed to practise in this country other than with the Resettlement Corps. Mr. BEVAN said he was considering this matter, but was not yet in a position to give the detailed information asked.

Malaria in British Troops in Japan.—On July 23 Mr. LAWSON stated the incidence of malaria in Japan as a whole, for British troops, was very small. In the fortnight ending May 31, 1946, three cases were reported, and in the fortnight ending June 14, 1946, one case. All the usual anti-malarial precautions, and certain special measures which included spraying with D.D.T. and the arsenical compound (Paris Green), were being taken.

Medical News

Mr. John Pringle, Deputy Editor of *The Listener*, has been appointed Press Officer to the British Medical Association. Mr. Pringle was formerly responsible for "The World Goes By" broadcast feature, and was a member of the editorial staff of *The Manchester Guardian*.

The residential summer school on "Healthy Living" at the University of St. Andrews, arranged by the Scottish Council for Health Education, opened on Aug. 3 and continues until Aug. 17. Subjects for discussion during the second week include the quest for pure food (Aug. 12); mental affliction (Aug. 13); adolescence and senescence, venereal disease (Aug. 14); homoiostasis, tuberculosis (Aug. 15); and the case for eugenics (Aug. 16). Films on various subjects will be shown each evening from Monday to Friday at 8 p.m.

The County Borough Group of the Society of Medical Officers of Health held its Annual Meeting from July 19–22 at Eastbourne, under the presidency of Dr. R. H. H. JOLLY. Among the addresses given at the conference was one by Dr. SCOTT WILLIAMSON on the work of the Peckham Pioneer Health Centre from its foundation. Dr. F. FENTON, the Medical Officer of Health of Eastbourne, in a paper on "The Care of Homeless Children" stressed the need for co-ordination of their care through the person of the medical officer of health. Prof. J. M. MACKINTOSH outlined his ideas on the training of medical administrators and on the scope of their activities. Dr. W. S. WALTON, the newly appointed Medical Officer of Health for Newcastle-upon-Tyne, was elected president of the Group for the coming year. The secretary is Dr. J. GREENWOOD WILSON.

Prof. P. F. Armand-Delille, a member of the French Academy of Medicine, is on a visit to this country under the auspices of the British Council to gather information on British social services. He is visiting various organizations in London, Birmingham, and some rural areas, under the guidance of the National Council of Social Service.

The Medical Research Council have made arrangements with King's College Hospital Medical School, London, for the establishment of a dental research unit there under the direction of Dr. J. D. King, a member of the scientific staff of the Council.

Certain admirers of the work and career of the late French scientist Prof. Antoine Béchamp hope to hold a small dinner in his honour on Oct. 16, the anniversary of the date of his birth in 1816. If any who might like to attend will write to Miss L. S. Caffyn, 81 Chelsea Gardens, London, S.W.1, further particulars will be supplied.

There was some discussion at the Annual Representative Meeting (*Supplement*, Aug. 3, p. 38) on the need for operating gowns, and the coupons wherewith to obtain them. The Board of Trade has recently had under consideration the possibility of the supply of coupon-equivalent certificates to doctors in private practice for whom white operating gowns are essential. It has now been agreed that any practitioner who needs gowns in his private practice for obstet-

rical work, treatment of venereal diseases, operations, or necropsies, shall be entitled to obtain six surgeons' operating gowns. Private practitioners in England and Wales who require gowns for these purposes should apply, stating particulars, to the Ministry of Health, Whitehall, London, S.W.1. Doctors in Scotland should write to the Department of Health for Scotland, St. Andrew's House, Edinburgh. Practitioners in Northern Ireland should apply to the British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1, enclosing a stamped addressed envelope.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* a rise occurred in the notifications of whooping-cough 204, scarlet fever 91, and cerebrospinal fever 16; decreases were recorded for measles 198 and diphtheria 30.

Whooping-cough notifications were the largest for over two years. During the week there were small increases in many areas and the largest variations were a rise in Staffordshire 35 and a fall in Lancashire 63.

Scarlet fever increased for the whole country; the largest of the local changes was a decrease in Lancashire of 32. Large falls in the notifications of measles were recorded in Lancashire 213 and London 138, while the largest rises were Staffordshire 56 and Kent 44. A further decline from the record low level of diphtheria was recorded; the chief fluctuations were falls in Lancashire 23 and Yorkshire West Riding 10, with an increase in Warwickshire 10. Dysentery remained at the low level of the preceding week, and the only large returns were those of Yorkshire West Riding 10 (Bradford C.B. 9), and the Port Health District of Southampton 8.

In *Scotland* there were only small variations in the incidence of infectious diseases, except for measles, which declined by 66. The notifications of diphtheria fell by 4 for the whole country but a rise of 10 was recorded in Glasgow.

In *Eire* notifications of diarrhoea and enteritis fell by 10 to 54, and cases of diphtheria decreased by 9. A rise occurred for measles 16, whooping-cough 10, and scarlet fever 8.

In *Northern Ireland* whooping-cough rose by 10 cases and diphtheria by 5, while a fall of 8 was recorded for scarlet fever.

Quarterly Report for England and Wales

The birth rate during the first quarter of the year was 17.2 per 1,000, which was 1.5 above the average of the five preceding March quarters. Stillbirths formed 2.8% of the total births registered. Infant mortality was 55 per 1,000 live births and was 14 below the average of the ten preceding first quarters. The general death rate was 14.8 per 1,000 compared with 15.7 for the average of the five preceding March quarters.

Birth Rate in June Quarter

The Registrar General for England and Wales has stated that 203,797 live births were registered during the June quarter of this year. This number is equivalent to a birth rate of 19.2 and is the highest recorded in any June quarter since that of 1925.

Statistical Review

The publication of the Registrar General's annual statistical reviews, suspended during the war, is now being resumed. So that the latest statistics shall be available again as soon as possible, the Registrar General is now preparing the Review for 1945, which will contain both medical and civil tables, and it is hoped to publish these later in the year. This will then bring the series up to date except for the reviews for the war years 1942–3–4, which will be issued separately as soon as possible.

Quarterly Return for Northern Ireland

The birth rate during the first quarter of the year was 21.9 per 1,000, which was the same as the average of the five preceding quarters. The infant mortality was 64 per 1,000 registered births, compared with 95 in the corresponding quarter of the previous year and 91 as an average for the five preceding March quarters. Maternal mortality was 3.3 per 1,000 births, the same as the five-year average. The general death rate was 16.4 per 1,000 and was 0.1 above the average for the five first quarters. The number of deaths from pulmonary tuberculosis was 247 and from other forms of tuberculosis 64, the averages of the first quarters 1941–45 being 255 and 79 respectively.

Week Ending July 27

The notifications of infectious diseases during the week in England and Wales included: scarlet fever 994, whooping-cough 2,468, diphtheria 308, measles 3,741, acute pneumonia 363, cerebrospinal fever 41, dysentery 90, acute poliomyelitis 18, paratyphoid 14, typhoid 8.

No. 29

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 20.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland: (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946					1945 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	49	9	19	—	1	45	2	16	1	1
Deaths		1	—				—	—		
Diphtheria	247	23	67	25	20	444	30	115	76	17
Deaths	1	—	1	—	—	9	1	—	—	—
Dysentery	60	4	28	—	—	249	41	44	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	2	2	—	5	—	—	—	—
Deaths		—					—			
Erysipelas			37	8	—			36	5	—
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				54					58	
Deaths	36	2	13	17	1	59	11	4	14	3
Measles*	3,783	492	201	70	1	3,475	153	81	32	2
Deaths	3	—	—	—	—	3	—	1	—	—
Ophthalmia neonatorum	66	5	29	—	1	65	3	18	—	—
Deaths										
Paratyphoid fever	20	—	1 (B)	1 (B)	1 (B)	9	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	380	22	2	1	3	350	21	4	1	2
Deaths (from influenza)†	2	—	—	1	—	5	—	—	—	—
Pneumonia, primary			140	19				134	11	
Deaths		14		4	6		12		11	8
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	10	—	2	—	—	16	—	—	2	1
Deaths		—					—			
Puerperal fever		3	31		—		4	13		—
Deaths										
Puerperal pyrexia‡	133	12	21	1	2	133	8	14	4	3
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	936	79	104	29	15	1,254	74	191	14	19
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	6	—	6	4	2	9	1	—	—	—
Deaths	—	—	—	—	—	—	1	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths		—		—	—				—	—
Whooping-cough*	2,474	167	25	46	24	1,158	49	21	20	8
Deaths	4	1	—	1	1	8	—	—	1	1
Deaths (0–1 year)	299	36	64	34	13	295	38	35	24	16
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,856	571	540	162	136	3,878	531	510	149	117
Annual death rate (per 1,000 persons living)			11·9	10·4				11·6	9·6	
Live births	8,921	1356	1158	396	321	7,055	835	907	456	321
Annual rate per 1,000 persons living			23·3	25·4				18·1	29·4	
Stillbirths	241	31	44			209	12	33		
Rate per 1,000 total births (including stillborn)			37					35		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.
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ANY QUESTIONS?

Common Cold and Duodenal Ulcer

Q.—*Why does a common cold aggravate the symptoms of duodenal ulcer?*

A.—It is a well-established fact that catarrhal infections, including the common cold, will bring about a relapse of symptoms in a number of alimentary conditions, notably duodenal ulcer. In this respect it is second only to emotional stress as a cause of ulcer recurrence. It is difficult to say exactly how or why this comes about. The ulcer base has been shown, particularly by French observers, to be an infective area, and various organisms, notably enterococci and non-haemolytic streptococci, have been obtained from it on culture. It seems reasonable to suppose that this area becomes sensitized and re-activated by the organism of the catarrhal infection, or perhaps by the general tissue response to the accompanying low-grade fever. Rosenow's theory of the elective affinity of streptococci, notably those found in oral sepsis or certain damaged tissues, especially peptic ulcer, may be cited as a possible mechanism, though his work has not received confirmation in this country. The practical point to remember is that in all schemes directed towards the prevention of ulcer recurrence emphasis must be laid on the need for drastic modifications in the diet and a short period of rest in bed in the presence of these infections.

Urobilinogen Excretion in Infective Hepatitis

Q.—*The presence of excess of urobilinogen in the urine is often used as an index of liver damage, particularly in the early diagnosis of infective hepatitis. What is the rationale of the test?*

A.—Urobilinogen is formed in the bowel by bacterial action (reduction) on bilirubin. A proportion is reabsorbed into the blood stream and re-excreted by the liver in the bile. If the liver cannot deal with all the urobilinogen presented to it, increased amounts will appear in the urine. This function of re-excretion by the liver is one which tends to fail early in many types of hepatic damage, especially in infective hepatitis, so that urobilinuria is often an early and valuable indication of liver dysfunction. Either the presence or absence of the pigment in the urine must, however, be cautiously interpreted in cases of frank jaundice (where bilirubin, and therefore urobilinogen, may be absent from the bowel) and if excessive haemolysis is occurring, when the excretory function may be so overloaded that very slight hepatic impairment is sufficient to allow urobilinuria to appear. Incidentally, urobilin and urobilinogen have the same significance in this connexion, the distinction being merely one of technique.

Dupuytren's Contracture

Q.—*What are the late results of the operative treatment of Dupuytren's contracture?*

A.—The results are very good if the operation is done at the correct time and in the approved manner. The correct time for operation is before the ligaments and joints of the finger become secondarily affected. The approved method is to remove all the contracted palmar fascia through an incision not in the line of an affected finger but so planned that it runs as nearly parallel as possible to the creases of the palm. If the skin of the palm is attached to the contracted fascia it must also be excised and a graft of whole skin taken to make good the gap in the palm. A pedicle-graft may be utilized.

Artificial Blondes

Q.—*A patient of mine is in the habit of bleaching her hair periodically with a mixture of hydrogen peroxide (20 vol.) and ammonia (about 2 parts to 1 part). She has been informed by a hairdresser that this will eventually destroy the hair roots. Is this true? If not, is there any danger?*

A.—It has been suggested that the different colouring of the hair is due to differences in the keratin and not to different kinds of colouring matter. Whether this be accepted or not, it is evident that to change dark hair to the fashionable blonde calls for drastic treatment, such as that described above. The effect is to make the hair lighter in colour, but harsh in texture and liable to split, which can hardly be beneficial. The popular description of the roots being darker refers to the darker texture and colour of the hair near the scalp, which may be due to the natural growth of the hair or to technical causes. The true roots or papillae are situated in the skin and are unlikely to be affected by external applications.

Idiopathic Epilepsy

Q.—*Can idiopathic epilepsy be due to a very heavy strain—e.g., carrying or pulling or pushing a very heavy weight?*

A.—There is no evidence that physical stress of the sort mentioned could bring about an idiopathic epilepsy. According to the modern conception this disease is a constitutional and largely inherited paroxysmal disorder of cerebral activity.

Significance of Renal Glycosuria

Q.—*What is the true clinical significance of renal glycosuria? Does the condition ever lead to true diabetes, and should a patient with renal glycosuria be accepted for life insurance at ordinary rates?*

A.—Provided that the sugar tolerance curve is within normal limits, glycosuria is not of any significance. The health remains good and the patient is neither more nor less likely than anyone else to develop diabetes later on in life. He should be accepted for life insurance at ordinary rates. The amount of sugar lost in the urine is usually small—5 or 10 g. a day, though as much as 30 g. may be excreted in the day. This is a very small amount and the glycogen in the liver and muscles can easily be maintained by an adequate diet.

A very low threshold occasionally occurs in some patients with true diabetes mellitus. The control of the diabetes is then much more difficult, as qualitative urine tests are useless and the blood sugar must be estimated more frequently. Sometimes very large amounts of sugar are excreted although the blood sugar is not much raised. In these circumstances the total sugar excreted in the urine in the twenty-four hours must be estimated, and if the patient is excreting, say, 100 g. a day the carbohydrate content of the diet must be raised to 200–300 g. in the day, with a corresponding increase of insulin to make certain that the body, and the liver especially, has enough glycogen. If the total daily output of sugar is estimated at intervals, and the insulin and diet are adjusted according to the results, these patients keep very well.

Amoebic Dysentery

Q.—*(1) How should I treat a mild case of amoebic dysentery? (2) Can chiniofon be given by mouth, and which preparation do you recommend? (3) Is rest in bed necessary for a mild case?*

A.—1.—In a mild case of amoebic dysentery it is not necessarily easier to eradicate the infection, nor is the disease necessarily less prone to relapse than a more severe case. Consequently treatment should be thorough in all cases. A favoured standard treatment consists of a twelve-day course of emetine bismuth iodide 3 gr. (0.2 g.), in a loosely packed capsule each night, and preceded half an hour before by phenobarbitone 1 gr. (65 mg.). Each morning of this course the patient is also given a retention enema of 200 ml. of 2½% solution of chiniofon, which should be retained for four or five hours, and which is

preceded by a bowel washout of 2% sodium bicarbonate solution. This twelve-day course is then followed by treatment with an arsenical drug, for example carbarsone 0.25 g. by mouth, morning and evening, for a further ten days.

2.—Chiniofon may be given by mouth. Chiniofon is the *Pharmacopoeia* name for a standard iodo-hydroxyquinoline compound. This product is marketed by different firms under different names, and the product of any reputable firm should be equal in its therapeutic effect to that of any other reputable firm. Administered by mouth in amoebic dysentery it appears to produce less satisfactory results than does the combined treatment outlined above.

3.—During the first fortnight of the treatment recommended in para. 1, the patient should be kept in bed.

Cholecystitis and Duodenitis

Q.—*How can one differentiate between mild cholecystitis and duodenitis and duodenal ulcer without* X-*ray examination?*

A.—It is difficult and at times impossible to distinguish between these three conditions in the absence of radiology, and even this may fail to do so. Generally speaking, the symptoms of cholecystitis lack the periodicity of ulcer dyspepsia and are more likely to be associated with excessive flatulence and with such toxic manifestations as furring of the tongue, anorexia, and even vomiting. Tenderness, if present, will usually be confined to the gall-bladder, Murphy's sign may be present, and there may be local areas of tenderness to the right of the sixth dorsal spine (Ryle) or the twelth dorsal spine (Boas).

It would be worth while trying the effects of a course of sulphadiazine or sulphamethazine, which are excreted into the gall-bladder in high concentration. More empirically, a course of hexamine, 20 gr. (1.3 g.), with a full dose of alkali to prevent gastric irritation, has been credited with satisfactory results in cholecystitis. Duodenitis is a pathological rather than a clinical condition and its symptoms are probably indistinguishable from those of duodenal ulcer.

Sex-determination

Q.—*Is there any recent new knowledge of sex-determination? Has the theory of Dawson (1921) any foundation?*

A.—The basis of sex-determination in man, elucidated many years ago, has required no modification. The female somatic cell contains two *x*-chromosomes, hence the ovum contains one. The male somatic cell contains an *x*- and a *y*-chromosome, hence approximately half the sperm contain an *x* and half contain a *y*. The sex of the future individual is determined at the moment of conception and depends simply on which kind of sperm happens to fertilize the egg. The sex ratio does depart somewhat from equality, however, and it has been shown, for example, that the younger the mother the more likely she is to have a boy. There are also indications that the tendency to produce an excess of boys, or vice versa, may be inherited. Therefore it is clear that there are influences that make it on occasion rather less or rather more likely that it will be an *x*-bearing sperm that fertilizes the ovum. These are slight tendencies, however, only detectable in the averages of very large numbers. From the point of view of any individual parent the chance is pretty close to 50–50.

Dawson's theory, perhaps the best known of several of the same type, postulates that one ovary produces eggs destined to give rise to females and that the other gives male-producing eggs, and that the ovaries function alternately at successive ovulations. There is no scientific basis for these theories.

Psychological Impotence after Long Separation

Q.—*I have been consulted lately by several men, all about the age of 45, who after service abroad for some three or more years return home to their wives to find themselves completely, or almost completely, impotent. Instead of happy reunion after so many years apart, the marriage is in danger. I am convinced that this impotence is psychological, but what is the explanation and what advice can I give them?*

A.—The problem here presented involves the whole personality and not merely the sex functions. It is a problem of readjustment and psychological rehabilitation. The war and absence change the relationship between husband and wife, a change in which both are affected. For one thing, wives have had to be more independent and therefore self-sufficient; they do not need their husbands so much as before, and therefore to the husband have become different persons. On the other hand, the husband has either developed a much broader outlook on life, or he may return war weary and desire more affection from the wife, whose independence makes her less willing to give it. His war weariness may go to the extent of developing a "mother" complex towards his own wife, which in itself is sufficient to produce an inhibition of sex. In other cases a different mechanism is found, namely, that absence has made each idealize the other, especially the soldier who idealizes both his wife and home. After the first rapture the reunion may be in the nature of an anticlimax: each thinks the other has "changed," which indeed is true, but the change is often in contrast to the ideal. These problems of rehabilitation of returned Servicemen have been studied by Dr. A. T. Wilson and embodied in a paper, "The Service Man comes Home." Among more normal reasons is the possibility that the wife may have made other attachments, though not necessarily of a sexual nature, to some other man, and being now more conscious of other men has less regard for her returning husband. There is also the obvious possibility that in the Middle East the husband may have met some younger and perhaps more exotic girl with fewer inhibitions, and it is an anticlimax to return to the more mature and stable, if not drab, circumstances of life. The middle-age factor is important: the wife, though still attractive, may not make the same glamorous appeal.

During their enforced separation both husband and wife have each taken a lot of trouble to adapt themselves to being without the other. Having once established this new set-up in the personality, it is difficult for them to readapt themselves to their partners. Time, trouble, and patience are required to re-establish their relations. These relations will not be the same as previously, for even in ordinary marriage we need to readjust ourselves differently at each phase of life. But with readjustment of such personal relations, the sexual life will re-establish itself as an expression of affection.

In many cases we find that war service and separation have only served to bring to light an incompatibility of temperament or disposition which was already present before the break, so that the break becomes a welcome relief, and there is reluctance to resume former relations. A readjustment in such circumstances is very difficult. It will be observed that we cannot regard the sex functions in isolation, but need to regard the reactions of the whole personality, which requires to be thoroughly investigated.

LETTERS, NOTES, ETC.

Acid Treatment of Tetany

"MGANGA" writes: With reference to Dr. Marjorie Bourdillon's note (June 8, p. 902), I had an exactly similar condition in a male patient very recently. The onset was sudden and occurred after three days of a febrile illness, at first undiagnosed but which later was clearly typhus. Sweating and vomiting had been prominent symptoms just before the attack started. I obtained just as dramatic a cessation by administering two tumblerfuls of slightly hypertonic saline—by mouth, of course. I suggest that in my case and Dr. Marjorie Bourdillon's personal experience loss of chlorides due to sweating in the febrile attack occurring in a subject already low in salt was the real cause of the attack. In my case the patient was a railway employee occupied out of doors. He normally sweated freely at his work and was accustomed to drink large quantities of water. While taking food he just managed to maintain a chloride balance. Three days of fever, fluids, vomiting, and no food upset this, and the attack was the result. In Dr. Bourdillon's case lactation and malaria would have the same effect. In passing, I have succeeded in re-establishing lactation in a case where this was beginning to fail after three months, merely by prescribing a daily tumblerful of normal saline.

Health Service Bill

Dr. LESLIE HARTLEY (Camberley) writes: Mr. Douglas Houghton explained on the wireless in fifteen short minutes how many B.U.s were necessary to buy a small loaf in this country, twelve months after total victory. I hope some similar speaker will give a talk on the National Health Service when it comes in, so that fond parents may be able to decide whether to spend their P.U.s on little Willie's tonsils and adenoids or on another bottle of liquid paraffin for granny.